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The Brickmakers' Convention.

[From our own Correspondent.]

LOUISVILLE, KY., January 28.

On Tuesday afternoon, the 24th inst., the National Brick Manufacturers' Association opened their seventh annual convention in this city. The gathering was probably the largest which has been present at any meeting, some 300 members being in attendance. The meeting was held in the Board of Trade rooms, and at about three o'clock in the afternoon, after the enrollment of names, the president, Mr. Charles B. Pearson, of Washington, called for order and opened the session. After a brief prayer by Rev. S. S. Waltz, of Louisville, Mr. Pearson introduced Mayor Henry S. Tyler, who welcomed the brickmakers to the city and extended to them its heartiest greeting and freedom. Following this President Pearson delivered his annual address, which in a brief but comprehensive manner reviewed the progress of the association and its prospects. Reports from the secretary and treasurer were then received, and following this came nominations for president during the ensuing year. It has been the custom of the association to nominate a resident member of the city in which it meets, and in conformity with this practice Captain Crafts, of New Haven, Conn., rose and named Mr. A. L. McDonald, of Louisville. It seems that there has been a feeling among some of the members that this custom should not be continued, and many were in favor of Mr. Anthony Ittner, of St. Louis, who has long been a prominent member. Mr. McDonald was not only aware of this feeling, but heartily coincided with it, and after being nominated made a brief speech, stating that he realized the honor conferred upon him, but felt that the custom of naming a president from the city in which the convention was assembled was not a good one, and further, that there were others better entitled to the place. He then requested the convention to permit him to withdraw his name, and at the same time stated that it was the wish of the Louisville members that Mr. Ittner be chosen. A number of members made short speeches resisting Mr. McDonald's withdrawal, among them Mr. Ittner, but his wish finally prevailed, and Mr. Ittner was nominated and elected.

The election of three vice-presidents was next taken up, and Mr. A. L. McDonald, of Louisville, was elected first vice-president without opposition. Mr. W. D. Gates, of Chicago, and Mr. B. W. Blair, of Cincinnati, were elected second and third vice-presidents respectively. For recording secretary were placed in nomination Mr. C. P. Merwin, of North Haven, Conn., the incumbent, and Mr. Dixie Doyle, of Chicago, the editor of the *Clay Record*. The ballot resulted in the election of Mr. Merwin by a vote of eighty-eight to sixty-eight. The election was made unanimously.

The nominations for corresponding secretary were closed by Mr. Flood, of Philadelphia, naming the present incumbent, Mr. T. A. Randall. By unanimous assent Mr. Flood was directed to cast the vote, and did so, amidst the laughter of the members, by solemnly placing a pressed brick with "Randall" stamped upon it in a little grip, locking it and announcing the

ballot box closed. Mr. John W. Sibley, of Alabama, was unanimously elected treasurer. After short speeches by President Ittner and the other newly-elected officers, a motion to adjourn was made and carried. In the evening the "fifth annual pow-wow" was held at the Galt House, and was beyond doubt one of the most jovial celebrations which have taken place in Louisville. The delegates marched in pairs to their places in the dining-room and remained standing while grace was said by the Rev. S. S. Waltz. The supper was an excellent one, with many courses of good things, including Kentucky's substitute for water, and ending with coffee and cigars. With this last course came the speeches, all of which were informal and all the more bright and crisp for being so.

WEDNESDAY SESSION.

On Wednesday morning, the 25th inst., the members were called to order at half after nine. An interesting essay on "Enameling Brick," by Isaac Hardy, of Aberdare, England, was read by Secretary Randall in the absence of the author. A general discussion of "The Year's Record," led by W. D. Richardson, of North Baltimore, Ohio, followed, and many interesting matters were brought before the members, among them the relation of insurance companies to brickmakers. Mr. D. V. Purington, who referred to this, stated that owing to the many losses by fire, insurance companies had almost refused to take any more risks in brick manufacturing plants. Mr. McGrath, of Pittsburg, then read an interesting and instructive paper on "The Mistakes of Brickmakers," which was followed by a general discussion of the subject. After this Mr. L. J. Howard, of St. Louis, read a paper on "Burned Clay." This was treated in a most thorough manner, showing the importance of burned clay from the earliest eras of antiquity down to the present time. During the afternoon a paper on "Association Among Brickmakers" was read by Alexander Prussing, of Chicago. Following this was an exceedingly interesting and practical essay on "The Professional Brickmaker," read by Mr. Joseph Fairhall, of Cape Creek, Ill. The next paper read was on "Paving Brick; Their Manufacture and Use," by W. S. Williams, of Canton, Ohio. This was followed by a lengthy discussion as to what a vitrified brick should be. A resolution was offered by Mr. Endaly proposing that the standard size building brick used in Philadelphia, $2\frac{1}{4} \times 4\frac{1}{4} \times 8\frac{1}{2}$ inches, be adopted as a minimum for vitrified paving brick. This was carried unanimously.

THURSDAY SESSION.

At nine o'clock Thursday morning the convention reassembled, and a paper on "How Best to Dry Brick" was read by Secretary Randall in the absence of the author, D. G. Rhoads, of Omaha, Neb. A paper on the "Manufacture of Bricks from Shale by the Dry Press Process," by J. R. Figh, of Dallas, Texas, was read by title, the author being absent. Secretary Randall then read a short paper prepared by E. O. Gliddon, of Boston, the subject being "Old Foggy Brickmakers."

Evolution of the Brick Machine.

The succeeding paper, on the "Evolution of the Brick Machine," by Mr. Cyrus

Chambers, of Philadelphia, was one of the most interesting read at the meeting. In commencing Mr. Chambers said: Perhaps the "Evolution of the Brickmaker" would have been a more appropriate title for this paper, but as our secretary has selected this one, it may be enlarged to suit both. After speaking of his early recollections of brick-yards, where the clay was tramped by a man, he told of the first brick machine he had ever seen, and afterward of the efforts of his brother and himself to perfect a machine for the work. The following abstract of the paper will prove of interest:

It soon became apparent in our experiments that a machine which only molded brick from wet tempered clay would be of little value. The dry process was next examined, and offered a more encouraging outlook. Samples of a fine, tenacious clay were procured, thoroughly dried and pulverized and put in a round mold. This was put under a hydraulic press giving a pressure of 600 tons per square inch, and the result was that water flowed from it and a fine stream of clay issued from a trifling scratch between the plunger and cylinder. On burning this brick almost to vitrification it was found that each granule of clay was in its original shape, with a fine fissure between each, and upon submerging it in water it absorbed 5.55 per cent. of its weight. This demonstrated four things:

First—To dry clay perfectly is impracticable, if not impossible.

Second—That no reasonable amount of pressure alone will cause the various particles of ordinary clay to adhere and form one solid homogeneous mass.

Third—That argillaceous and sandy material so put together and burned was a great absorber of moisture.

Fourth—That a brick so made, burned and soaked would not stand "freezing and thawing," but would crumble to dust, and each granule of sand and each particle of clay remain in its primitive disconnected condition and could be distinguished in the blackened mass.

Discouraged by the investigations into the two proposed extreme plans for a process upon which to construct a machine, an intermediate process was conceived of and experimented upon with gratifying results. By working the clay as nature furnished it—with the natural moisture in it—all time expense of drying was avoided. By mixing and tempering in a stiff consistency the granular part of the material was thereby incorporated with that of the plastic and a thoroughly homogeneous compound produced. When forced to shape, "molded" in this stiff condition, the bricks could be at once handled, wheeled to sheds and "hacked up" out of the weather, thus avoiding the expense of floors, "edging up" and "taking in." Samples made by this process stood all the tests of strength, absorption, frost, etc., and it was determined to proceed to construct a working model upon this general principle—that is, what is now known as the stiff-tempered clay process.

It was now necessary to find by experiment the amount of power required to temper and mold this stiff clay, and the first model machine was continually breaking

down or sticking fast. When this occurred the weak parts were strengthened and finally a working model produced which tempered its own clay and molded it into a continuous bar. This was cut into lengths by an automatic cut-off knife and the bricks carried away on an endless apron. These model bricks were small in size, and after being burned were examined by expert brickmakers, masons and scientists. Among other features it was noted that the skin was finer and richer in color than the rest of the brick. Further experience showed that this result was due to the action of the machine upon the clay by moving particles upon each other under great pressure.

This was the first completely automatic machine ever produced performing all the operations by one completely embodied mechanism. A recent and thorough search into the 24,254 patents issued by the United States Patent Office and those of foreign countries for brickmaking machines fails to show any complete automatic practical machine for producing brick or tile upon this principle prior to the completion of this model machine. This machine (working model) was conceived and constructed in the latter part of 1860. Working drawings were made for a large machine and calculations made from the best data we had gathered from the numerous models which had broken down for the strength and power required, and the machine constructed, erected and tested in the shop.

Our shop was then in the second story of a building at Seventh and Cherry streets, and the owner was afraid it would break down his building, the complete machine weighing over ten tons. We stalled his 100 horse-power engine, smashed down spur wheels of enormous strength, twisted off heavy shafts and parted bolt after bolt before we learned the strength required for the machine and the power required to temper and mold stiff clay.

Finally the machine worked, producing thirty brick per minute. An exhibition was given and our numerous friends invited. Practical brickmakers objected to the machine on the ground that there was no sand on the bricks, their ends were rough, the length unequal and the clay stratified. Somewhat discouraged, these objections were carefully studied and all overcome, except the rough ends and laminations of the clay. About this time the excitement of the civil war was upon us and labor scarce. Brick consumers became less fastidious, and we determined to erect our machine and begin manufacturing brick. An abandoned yard on Pea Shore was rented, and preparations made for the final start. This was in the early part of '62.

Our first order for bricks made by this process was from a friend for two small houses; the second for two millions, with the stipulation that, at the option of the owners, the walls were to be measured if the count was not satisfactory and settlement made accordingly. Measurement was ordered. Then a new development appeared relative to the quality of these brick. They overran the count by measurement about 10 per cent., owing to their superior strength, and consequently little or no waste. The "lamination," which

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was so much criticised and condemned at first, proved to be one of great merit, adding great strength to the brick crosswise. Clay, like many other materials, arranges its particles lengthwise while being rolled, drawn or forced through dies, hence brick so made were much stronger in cross section than those of homogeneous structure.

The first full-sized machine was replaced at the end of the season with one of improved construction, which has been in constant use ever since. Thirty years is no mean life for any machine, much less for one working in such abrading materials as clay and sand.

We thought our troubles over, but the devices which worked so satisfactorily in one bank of clay refused to operate in that from the other side of the fence. Every variety of clay presents a new problem. A process or a machine entirely successful in one material may prove an utter failure in another. To adapt the machine to the various qualities of clay throughout the civilized world has been the work of over thirty years, and the task is not yet completed. Maine, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, the Carolinas, Florida and Louisiana each have their peculiar qualities of clay, to say nothing of our long list of Western States. Each failure, however, was but a spur to renewed effort. The nature of the material was carefully studied, the machine modified to suit its requirements, and, strange to say, every change so made was for the betterment of the machine for all the clays it had previously worked.

The first complete automatic expressing brickmaking machine (producing about 30,000 bricks in ten hours) was a cumbersome, heavy affair, and of too great a capacity (?) for the many then would-be purchasers. A machine of less weight and cost was much sought after, and we set about to produce one small and inexpensive for the smaller towns and villages, and proposed to call it the "Village brick machine." In designing and construction of this machine all the little points learned by experience were embodied, the exact proportions of each part with another carefully studied and calculated, and a machine produced that, instead of being of small capacity, nearly trebled the output of its larger and older brother.

Not to be thus baffled, a third effort was made to produce a machine of small cost and capacity. Taking advantage of the still greater experience in clays from various parts of the world, a machine was produced still more complete in detail and reliable in operation, but in capacity still far beyond the requirements for the "village." A fourth effort resulted in the production of one sufficiently meagre in its output, but so simple in construction and "kind" and efficient in operation that its novel features are accepted today for the production of the best quality and the greatest quantity of common brick. Taking the best parts of these three later machines and embodying them into one grand whole, we have what is known as the "B-CD," each of its predecessors being styled in its turn the "A," the "B," the "C" and the "D."

During these years many other inventors and experimenters were engaged in efforts to improve the ceramic art. No better evidence of this can be adduced than of the many patents issued by the United States Patent Office alone for improvements in machinery and kilns, to say nothing of those of foreign countries. 323 patents were granted in the United States for screw machines, 442 for reciprocating, 305 for rotatory, 394 for tile machines and 467 for improvements in kilns.

It is no small task for the brickmaker to select the most efficient machines and kilns for manufacturing brick from the above list. Certain processes are well adapted for one material, while wholly unfit for

another. One clay, say the natural prepared "malm" of the Mississippi and other rivers, is adapted to the dry-press process, while another, the tenacious, argillaceous material, requires an entirely different mode of working. One clay will require and stand much tempering and be improved thereby, while another will be ruined if over-tempered.

The price of a machine has but little to do with its selection; the very best is poor enough. A machine that will save its cost in from three to six months is not dear at any price. Today the best machines are fitted up with the greatest accuracy, of the very best materials, replete with all the little conveniences for their care and preservation, all parts made to interchange, and those in contact with the abrading materials easily and cheaply renewed. One machine may look just like another to the brickmaker unskilled in mechanics. Yet one is complete in detail, working day after day, week after week and month after month without interruption, while the other is constantly being stopped for repairs, and at the end of the month not half the rated output is realized.

In the selection of machinery for the preparation of clay, making of brick and burning, it is well to throw the risk of a trial upon the parties selling. Let them be at the expense of erection and testing an untried machine or kiln in a new material, and you make your decision after making and burning say half a million of brick by the new devices.

Probably nine-tenths of the brick consumed in the United States today are made by machinery, and what is the effect of this change upon the brickmaker? The brickmaker of today is raised to the dignity of a manufacturer, carrying on his business all the year round, employing steam by the hundreds of horse-power, digging his clay by steam, carrying it to the machine-house by rail, dumping it into large hoppers, and performing all the various manipulations of screening, mixing, tempering, molding, drying and burning without being exposed to weather, and never touching the clay with hands until it issues a completely molded brick. He has his "yard office" and his "city office" and clerks, and, if he understands his business, a large balance in bank, a nice square brick of "bonds" and a few corner lots, a row or two of houses and a nice one for himself and family to live in, and is respected amongst men. He is no longer the despised slave of the Egyptians.

At the conclusion of this paper Mr. Chambers received a hearty round of applause and the congratulations of his many friends. Following it was a paper on "The Fuel Question," presented by J. W. Carson, of Brussels, Ind. During the afternoon session James Taylor, of Long Island City, N. Y., read an interesting paper on "Front Bricks; Their Relation to Architectural Design." This was followed by considerable discussion, after which, by unanimous consent, the secretary read Mr. Figh's paper, which had been announced by title in the morning. The following paper on "Burned Clay as Roofing Material" was then read by Mr. J. R. Elder, president of the Clay Shingle Co., Indianapolis, Ind.

Burned Clay as a Roofing Material.

Under the head of burned clay as a roofing material the word "tile" expresses the material it is made of, how made and its uses. The Century Dictionary defines the word tile as a thin slab of baked clay used for covering roofs. Iron or other metal is not tile, nor is anything else other than burned clay.

Edward L. Morse published a series of articles in the *American Architect* in 1892 on the older form of roofing tiles that are exhaustive in tracing their history. He traces their use back to China several thousand years before Christ, and says they

were made even before the sloping roof was first used. Palm leaves, straw and the bark of trees formed the first coverings for sloping roofs, and then comes terra-cotta tile made in the form of bark, with the larger pieces curving upward and smaller pieces to cover the joints. It is a remarkable fact that tiles are made and used in this country today of the same general form that were used 4000 years ago.

In his classification Mr. Morse shows that the normal (Asiatic) tile was used in the Orient, ancient Greece and Italy, China, India, Greece and Italy; the pan (Belgic) in England, Scandinavia, Belgium, Holland, Japan, Java and various modern countries; the flat (Germanic) in Germany, Austria, Hungary, Poland, Switzerland, France and England.

In the shape and form of these tiles may be seen the same shapes and forms generally used today in Europe and America. The most artistic tiles are found in China, Korea and Japan, where they are highly glazed in different colors, with very elaborate finishings, making a very showy and ornamental roof.

A. Rospide has an article in the Encyclopedia of Architecture and Construction in which he divides roofing material into four parts—first, clay; second, stone; third, metallic, and fourth, wood, giving the preference in the order named. He says the following are requisites of every good roofing material:

1. It must exclude moisture, which rots wooden framework.
2. It must be capable of withstanding the force of the wind, and must admit of provision for all expansion and contraction consequent upon variations in temperature.
3. It must not overweight the trussing so as to increase the size of the supporting timbers.
4. It must be fire-proof.
5. The original expense should be consistent with the purpose which the construction is to serve.
6. It should require but little care.

Other architects have spoken as favorably of tiles in preference to all other forms of roofing.

Architects and others often wonder why more tile have not been used in the United States. This question is easily answered. In the first place, this is a timber country. Clapboards and shingles are easily made and form a cheap roof that answered the purpose for a time. Then came slate and tin and galvanized iron and felt and gravel, that could always be obtained when wanted, and were light and cheap. Tile, as made, was heavy, expensive, hard to get, and in consequence were only used on expensive buildings that could contract for them in ample time.

So far as I have been able to learn there are only five tile works in the United States. Three of these are in Baltimore and two in Ohio. Terra-cotta works have made tile on orders, but it is a branch they have not prepared for and only make when they feel compelled to. There are more tile made by one factory in Ohio than by all the balance in the United States. This fact would indicate that making roofing tile has not been profitable in this country, and this is probably true, as we find where any business is successful competition starts up all around it. In our opinion the reason the tile business has not been more successful is because the old form of tile and the way of making them in the old country has been followed in this. The tile is too heavy, has to be laid in cement, and the improved machinery has not been used in making them. And again, stocks have never been kept on hand to fill orders on short notice. When you think of the vast sums that are spent each year in buildings, and that fully one-twentieth of the cost of all these buildings are for the roofs, you can see what a business can be done if the tile can be had at a reasonable price.

In speaking of the tile factories above I did not include four that have been started within the last year to make tile under the patents of the Clay Shingle Co. One factory has been started at Baltimore, one at Trenton, N. J., one at Chicago and one at Denver. Before this year is out all these factories will be making tile on a large scale, and negotiations are now pending for several other factories.

In considering the value of roofing tile the question of protection from fire and insurance enters largely into the account. In these days, when so much money is spent in fire-proofing the inside of buildings with hollow brick walls, deadening the floors with terra-cotta blocks and steel joists and girders, it seems like folly to put materials on a roof, the most exposed part of the building, that will not resist the least heat, but rather attracts fire from adjoining buildings, and often when more than a square away. Many of you have had fires, and know what it means to be burned out; and all of you pay insurance, and know what a heavy tax that is. In Germany, where buildings are constructed under government inspection, with all possible protection against fire, and where tile roofs are universal, the rate of insurance is one-tenth of what it is in this country. A risk that will cost one dollar there will cost ten dollars here, and losses by fire there are as one to one hundred here. In the last seventeen years in the United States the losses by fire were \$1,818,323,306 more than the present national debt. In the year 1891 the loss was \$143,764,967 in 23,313 fires. Of these fires 981 were caused by sparks from locomotives and flues, on which the loss was \$4,506,184. There were 12,394 business failures traced directly to the loss by fires in 1891. Last year \$40,600,000 of property was destroyed by fire that did not originate on the premises or by exposure to adjoining property. The percentage of loss in 1891 that originated on the premises was 71 8-10, and by exposure 28 2-10. This is a fearful record of loss by fire, and the worst of it is every one has to pay part of it, whether his property was insured or not. This is only the money value of the loss, and if the loss in time and business by men thrown out of work was estimated, it would probably be more than doubled. Now, as it is an admitted and unquestioned fact that there is no material that affords as certain a protection from fire as burned clay, you see the value tile has for roofing. Nearly one-third the fires and one-third the loss in 1891 were from outside exposures that might and would have been saved if the buildings had been covered with tile. Can any stronger argument be used in favor of covering houses with tile?

Another valuable quality in the clay roof covering is that it is a non-conductor. Now it is as important in building a house to keep out the heat in summer as to keep it in in winter. It is the rule that the attics of our houses, and especially if covered with slate, are as hot as ovens, and as long as a single floor and coat of plaster only separate the attic from the sleeping room, the temperature in the latter nearly equals that of the former. Nothing so effectually overcomes this as a tile roof, which neither attracts the heat nor retains the frost. The sleeping rooms in a house covered with tile are always comfortable—cooler in summer and warmer in winter.

The day for boring auger holes with gimlets is past. In all mechanical business, and particularly in clay industries, in these days, it takes capital to start a business and carry it on. The profit is made today on the amount of business done—on the use of the best machinery and appliances and conveniences for handling and shipping. The point I want to make is, that to be successful in any branch of the clay business in these days you must have money enough to get the best machinery

and to meet all bills until your business gets on a paying basis. This is particularly true in the tile business. Many have the idea that the roofing-tile business is a small one; that it is like the drain-tile business—a neighborhood affair. It is not. It is a business as large as you have the money and business brains to make it. No tile factory I know of in this country has been able to keep a stock on hand to supply immediate demands. It has been necessary to order the tile for the roof before the cellar was commenced, and then often wait weeks or months, with the building exposed to the weather, before you get them. The consequence of this uncertainty and delay has compelled architects and owners to substitute other roof covering. Tile will stand shipping; the business is a large and growing one, but it must not be started and carried on in the gimlet principle.

Will tile sell? is a question that may be asked. I have been in a position to know they will. Of course, tile, as compared with other roofs, is not a cheap roof, and will not be used on the cheaper class of buildings. But tile has qualities for roofing no other material has, and if a tile looks well, has the fire and frost properties, can be laid at a small cost, is not too heavy and can be sold at a reasonable price, every building that has valuable records and property to protect—churches, school-houses, railroad depots and elegant private residences—will use them. The trouble is not to sell them, but to have them to sell, so that architects and builders know they can get them when wanted without delay. I know what I am saying when I tell you the only trouble about selling tile is in keeping a stock on hand to supply the demand. Tile is the coming roof in the United States.

I have shown you from the best authority that there is no roofing material equals tile. Slate is the next best, and in comparing prices with an inferior article you must bear in mind the relative qualities. The *American Architect* quotes prices on building materials. In looking at the quotations on slate in Chicago to builders and contractors the prices range from \$5.50 to \$14.00 per square. Red slate is \$12.00 to \$14.00 and unfading black and purple \$7.10 to \$9.00. Now, the tile made under the patents of the Clay Shingle Co. can be sold at a good profit for \$8.00 per square, and can be laid on the roof as cheap or cheaper than slate; so you see the modern tile made by machinery, having all the valuable qualities of the old tile, has the advantage in weight and price over the better class of slate. With these points in their favor who can say that tile is not the coming roof?

CONCLUDING ADDRESS AND ADJOURNMENT.

At the conclusion of this paper Mr. A. L. McDonald, of Louisville, who was to have prepared a paper on the "Vitrification of Clay," read a burlesque on the various papers presented at the meeting and concluded by saying that his subject was entirely too broad to be handled in a single essay. After passing resolutions of sympathy for members absent through sickness and one of thanks to the Louisville members, the Board of Trade and the Builders and Traders' Exchange for the courtesies of the week, the meeting adjourned.

On Friday morning about 150 of the members inspected the vitrified brick plants at Cloverport. Only one, the Acme, was in operation, but as it was the largest, turning out 70,000 bricks per day, the visitors secured a good idea of the place.

Convention Notes.

Among the clayworkers present was Joseph Stafford, clay expert and prospector, of Springfield, Ill., whose extended experience and sage judgment entitle him to a place among the best posted men in the business.

R. E. La Dow, well known as an old-time clayworker, who has not only kept up with the march of improvements, but helped to force them ahead, was present, representing E. M. Freese & Co., manufacturers of clayworking machinery, Galion, Ohio.

The Fate-Gunsallus Co., manufacturers of stiff-mud clayworking machinery, were represented by Mr. W. Mills, who is well known to the trade.

The Standard Dry-Kiln Co., of Louisville, had a carriage and one of its representatives ready to take any of the members to Mr. Neist's brick-yard, where one of its brick driers was in operation. Quite a number availed themselves of the opportunity and spoke in the highest terms of the work accomplished by it.

Mr. Wetherell, of the mining department of the General Electric Co., presented some nice illustrations showing a Marion steam shovel operated by electricity at work on a clay-bank.

The address delivered by L. J. Howard, of Evans & Howard, St. Louis, Mo., on the subject of burned clay was extremely interesting and received with hearty applause by the members.

George W. Sharer, of Philadelphia, manufacturer of Sharer's improved drier and calorific kiln, was present, accompanied by his Western representative, J. A. Ridgeway.

R. C. Penfield, L. Thorne and Mr. Macy were present, representing the well-known manufacturers of brick machinery, J. W. Penfield & Son, Willoughby, Ohio. During the session these gentlemen presented to the members a neat souvenir programme of the convention.

The Wallace Manufacturing Co., of Frankfort, Ind., distributed among the members a neat memoranda tablet bearing on one side an illustration in two colors, one black and the other white, the black one with chickens and the other clothed in blue and bearing the sign manual of the Louisville police force.

Where Sheep-Raising Will Pay.

Sheep-raising in the Southern States is too important a matter to be allowed to fail of achievement, either from the lack of enterprise of the farmers or from such causes as referred to in the MANUFACTURERS' RECORD of January 6th. The subject must be urged until adopted and the difficulties now encountered removed. If conducted with proper care and due business enterprise it will not only pay, but pay well. In the Chicago market the best sheep and lambs bring from \$6.00 to \$7.00 per 100 pounds, and the demand for them there and at other points is steadily increasing. Not only do they bring good returns from wool and mutton, but they enrich the land on which they are pastured and increase its value.

F. B. Norton, of Burlington, Wis., writing to the *Wool and Cotton Reporter*, says on this subject that, taking everything into account, our farmers consider sheep husbandry the most profitable branch of farming, and many a man who began with nothing can show \$100,000 or more to prove what sheep can do. Our bankers and business men have found sheep a safe and profitable investment. Two men in this region have sold sheep on long time to the farmers of Dakota to the value of \$200,000, and their capital thus invested has netted 15 per cent. interest. They have never lost a dollar in this business, the sheep proving ample security, while the farmers who bought them have in many cases made 100 per cent. per annum on their investment, or rather the investment which the sheep made for them.

At the present time the most favorable openings for sheep husbandry are in the Southern States east of the Mississippi river. In fact, it is the ideal region of all

the world for raising both wool and mutton. Even in the border States sheep can graze outdoors nearly every day in the year, and the mild winter is a business fact of immense value. It saves the profit-devouring expense of our long Northern winter and permits the feeder to take advantage of the high spring market both for lambs and mutton. The climate is one of the best in the world for developing combing wool, as it promotes a long staple and avoids the faulty break between the summer and winter growth.

The improved delaine merinos are doubtless the most profitable sheep for the South, as they are heavy shearers of the best combing wool, superior to that raised in Australia, and they will produce as much mutton from a given amount of food as the special mutton breeds, while they have the further advantage of being much hardier and thriving in large flocks. For some reason most of the rams of the mutton breeds that have been taken to the South from the North have died of liver disease, while, to my knowledge, merinos sent to nearly every Southern State have thriven.

Mutton sheep have proved a marked success in the blue-grass region of Kentucky, and it would seem wiser for the South to secure its breeding stock in that region. The mutton breeds must be kept in small flocks, and it is not likely that the average Southern farmer will adapt his habits to their needs in our day. He will raise cotton as his fathers have done before him, till both lands and himself are utterly impoverished.

In the Carolinas and Georgia, and in all the Gulf States, sheep get their own living on the range the year around, and hundreds of thousands are thus living without being fed, many of them having no owners. A few men have as high as 5000 of these native sheep which run at large and bring their owners about \$1.00 per year net income. Along the coast of western Florida there is one region that would furnish free and safe range for 50,000 sheep, and a practical Northern man has just started a flock there. The pine forests, having little undergrowth, furnish good pasturage, especially if burned annually, as in the region of Amite City, La., on the Illinois Central Railway. These Southern sheep are hardy and shear four pounds of wool. They can be bought at \$1.50 per head and make an available basis for large flocks.

Most Northern men would prefer to have their range enclosed for many good reasons, and the South offers the cheapest and most desirable sheep farms in the world. One or more plantations embodying both cleared and timber land can be bought for a song and enclosed with wire fence, which, if well stocked with sheep, would give their owner a better income than the costly estate of many an English baron or German count. On some of the German estates of 25,000 acres it is customary to carry flocks of 10,000 French merinos, which are as large as common down sheep and just the type we want in the South. In a few years the sheep would not only pay for the lands, but make them as rich as any virgin lands.

Many tracts of the best pine, hardwood and coal lands, which will soon double and quadruple in value, can still be had at a mere nominal price. There are no better sheep lands in the world, and if enclosed and stocked with sheep, the profits of two or three years would pay for the land and all improvements.

I recently received a letter from a friend living in the region of Birmingham, Ala. He was brought up a shepherd in England, and has kept sheep in Alabama for over twenty years, and considers it the best sheep region in the world. He now controls 12,000 acres of desirable coking coal lands, the mineral right costing only \$2.00

and the fee simple not over \$5.00 per acre, even when well covered with valuable timber. This is also the best of fruit land, the mining and manufacturing towns nearby furnishing a ready market. If the same land were in California, with a less desirable market, the papers would be booming it at \$100 an acre.

I know of many valuable tracts of long-leaf pine that would make ideal sheep ranches, one especially in central Georgia, a compact body of 70,000 acres of good timber. It excels also as farming and fruit land, and the price per acre is no more than that of a common sheep. I also recall a tract of 11,000 acres of hardwood lands near Chattanooga, Tenn., that any flock of sheep would be glad to call their home, and would pay for in two or three years. The timber even now will far more than pay for the land. Anyone who lives in the South or stays long enough to become thoroughly acquainted sees hundreds of such chances, without doubt the best in the world today.

When in Alabama three years ago I was surprised to see trainloads of shrewd New England men buying lots in cities scarcely born and paying at the rate of several thousand dollars per acre or lands which speculators had bought for \$8.00 per acre. Had they lived South longer doubtless they would have invested differently. We generally find that still hunting secures the most game.

I will cite only one more incident to prove what sheep can do. An able young man went South to manage an iron works. He found sheep running wild on the splendid range, the ignorant, shiftless natives being too lazy to care for them. He enclosed one or two old farms, about 1,000 acres, secured a competent shepherd, and stocked them with the native sheep. Last year he cleared \$5000 on an investment of \$3000, and found that his sheep paid better than his iron. He now has over 5000 sheep, and is arranging to make it 50,000.

Whether it shall prove profitable or otherwise to raise sheep on the abandoned farms of New England, it is plainly profitable to raise them on the abandoned farms of the South. Even if all duty should be removed from wool and sheep, it would not destroy the profits of the few who would be likely to raise mutton breeds or combing merinos in the South on a large scale and in the best manner.

Naval Stores Trade.

The market for naval stores in Savannah is reported as rather sluggish, and advices from all parts of Georgia say that stocks on hand are larger than at any time last year. Values for both turpentine and rosin are quoted much higher than for some time past, while the demand is light and sales difficult to make. Operators in Georgia and Alabama have reduced their territory, and it is said that the number of virgin trees cut will be 50 per cent. less than other years. While this may be the case, it does not follow that the yield of turpentine and rosin will be of a like percentage. It is likely that a large number of trees with old boxes will be utilized, but this will depend upon the prices current after the season opens. Receipts of naval stores are expected to begin late this year, as the severe cold weather of the last few weeks will retard the flow of sap very materially. The receipts reported at Savannah since April 1, 1892, to January 27, 1893, are 271,267 barrels of spirits and 923,160 barrels of rosin. The shipments, both foreign and coastwise and to interior towns, for the same period were 257,745 barrels of spirits and 771,985 barrels of rosin. Stock on hand and on shipboard January 27, 1893, is 13,522 barrels of spirits and 151,175 barrels of rosin, while for the corresponding date in 1892 the stock was reported at 10,527 barrels spirits and 112,389 barrels of rosin.

TEXTILES.

[A complete record of new textile enterprises in the South will be found in the Construction Department, on pages 18 and 19.]

An English View of Jute Culture in the South.

MANCHESTER, ENGLAND, January 18.

There is an alternative industry within the grasp of the Southern States. Why it is not entered into with more zeal I cannot say. Surely one or two failures ought not to damp the enterprise of a people who have in less than three decades shown such amazing powers of recuperation. I will go into the question of this industry from our point of view in England. Your cotton crop now requires an immense quantity of bagging which your means of production are unequal to supply, and the demand keeps increasing. There is no prospect of any decline in the manufacture of jute bagging. You have tried cotton bagging as a substitute. Now we all know, apart from vested interests, that this is an inferior article; it does not stand the rough wear in handling the bales until we receive them in our mills here; fire is more liable; steam carriers do not care for a freight of cotton enclosed by cotton bagging. On the other hand, jute bagging is strong, and will bear in reason any amount of hauling about. You are told that your climate is not favorable to the growth of the jute plant as a commercial enterprise. The same story was told about the cultivation of cotton on your soil a century or more ago, but you made the cotton plant grow after repeated failures, and from one of your garden plants, what is it now?

It is said that jute demands a strong soil; that Indian jute can be placed in your markets at a lower price (cost of freightage included from India), placing you at once out of the race in the growth of this plant for any profitable purposes. If I know what I am writing about, I should say, from my long sojourn in India, and having some knowledge of fibres, such as flax, ramie, etc., that I advise the South to try, try, again, and not wait for subsidies from Congress or any officialdom.

Allow me to say that the jute plant stands in need of very little attention. It is, in fact, of the hemp order or Indian grass. The crop will give a more certain result than cotton and considerably more profit with less labor, and the more so if you produce the material and fabricate it into bagging for your own use. Now let us clearly understand the conditions for cultivation. It requires a warm, damp climate, and will grow just as well upon high grounds and on such as are liable to be flooded, but it prefers an elevated position, provided the soil is damp and sandy. Have you any such territory as would suit this description? If my memory serves me, I have seen plenty of acreage in my travels throughout your cotton districts, not very far from where you grow your best cotton, well adapted for the purpose.

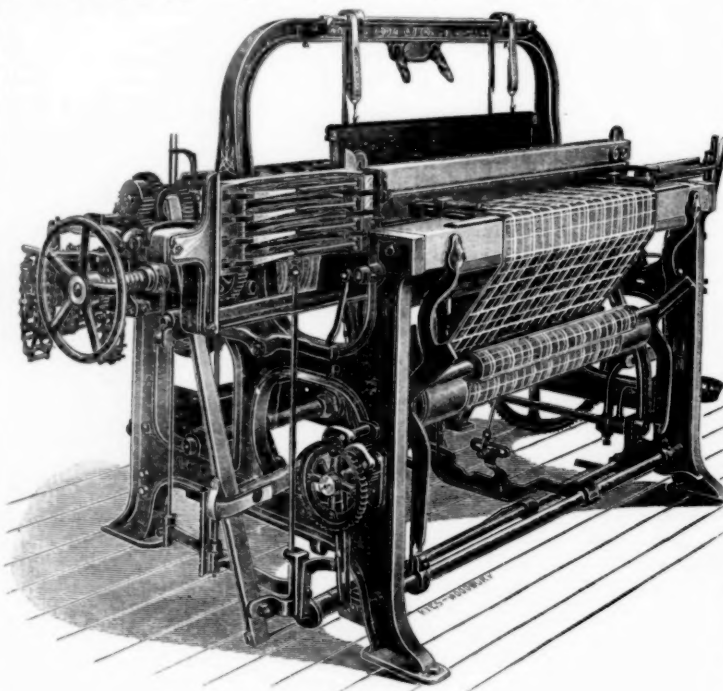
The time for putting in the seeds is important, according to the soil, humidity of district, etc., and may go all the way from February till April, or even as far as May and June. Perhaps this is the point to be observed, and probably where you have failed. The ground requires a thorough turning over and plenty of manure, and then sown with from twenty to thirty pounds of the seed per acre. In three or at the most four months the plants may have grown twelve feet in height, and the produce ought to be nearly a ton of fibre per acre. The crop is cut down when in the flower, because then the fibre is more lustrous and the stem not so hard. Steeping in running water takes greater time than in stagnant pools, which shortens the operation to something like nine or ten days. Of course the same purity and strength is not obtained as if conducted in

a stream. The length will then be from five feet to seven or eight feet. No part of the plant is useless. The leaves give fodder and manure, the stems will make baskets, the seeds oil, the lower stems paper, the silken outer skin separated in the preparation of the fibre will produce material for hats, etc., and, in conclusion, the manufacturing processes are similar to those for flax or tow, with much less dust and trouble to the operatives.

In the finishing of jute fabrics (apart from bagging) a high pressure of heavy calenders is required. Jute can be and is applied to many uses, and is on the increase. The jute velvet is fashionable as a fabric in the highest circles, because it has a most beautiful appearance, cannot be destroyed by insects, and for curtains, hangings and several kinds of upholstery, with the ground cotton, the pile jute is considered to be without a rival. In plush effects the patterns are imposed upon the fabric by hot rollers or plates, and prevented from rising to the surface by a weak solution of shellac back and front. This is not a costly fabric, and is a very handsome form of ornamentation. J. R. L.

Knowles 1893 Gingham Loom.

This cut represents the Knowles new gingham loom, built for 2, 3 or 4 shade work and 2x1, 3x1, 4x1 or 7x1 box, and



THE KNOWLES 1893 GINGHAM LOOM.

constructed with reference to the highest rate of speed, with positive box motion so arranged that either one of the series of boxes can be called at will, with stop motion combined with friction pulley and brake in such a way as to stop the loom on the pick without jar or strain upon the loom in any way.

The stop motion may be in the centre of the loom or at the single-box end, and is so constructed that the most delicate fabric can be woven without marking or defacing the goods. This stop motion has been so improved that the weaver can start the loom with the lay in any position from front to back, even if the filling should not be under the feeler wires. This is something that has never been accomplished on a stop motion before.

The brake is so arranged that the weaver can now turn the loom over by hand without applying the same. By this mechanism the loom is stopped instantly upon the breakage or absence of filling, but when the filling is replaced the loom is ready to start without any adjustment of parts or manipulation of ratchets, gears or pawls. There is also a relief motion upon the

crankshaft which is a very important feature of this loom, whereby all breakages of gears or parts connected with the box motion are obviated without any disarrangement of the boxes by its use, for, when re-coupled, the proper box will always be found in place.

The new multiplier attached to this loom has many special advantages. The pattern chain and the multiplier are so connected that when you set the pattern chain you set the multiplier, and they can never be out of time with each other. The practical weaver will readily understand the advantages of this style of multiplier. Another special advantage of this multiplier is that it is a chain multiplier and its operations are positive backward or forward, hence any desired combination can be obtained without the use of ratchets or cams.

The box motion is so arranged that there is only one movement of the box every two picks, so the boxes cannot change when the shuttle is in the plain end of the loom, thus avoiding any possibility for a collision of two shuttles, also avoiding considerable wear on the box mechanism. The weaver can set the pattern chain at any time without regard to the location of the shuttle, and there will be no danger when starting the loom of a shuttle smash.

This loom is built by the Knowles Loom Works, Worcester, Mass.

Southern Textile Notes.

A CHARTER has been granted to the Edisto Cotton Mills, at Charleston, S. C., the following being named as incorporators: Samuel Dibble, Thos. M. Raysor, Jas. H. Fowles, J. W. Lowman, J. W. H. Dukes, J. W. Cairy and B. H. Moss. The concern is to have a capital stock of \$100,000.

THE affairs of the Victor Cotton Mill at Charlotte, N. C., are in fine condition, and judging from the present outlook a prosperous year is before the company. At the annual meeting of stockholders held lately the following officers were elected for the ensuing year: G. E. Wilson, president; A. C. Hutchinson, secretary and treasurer; directors, R. M. Oates, M. P. Pegram, Sr., J. H. McAden, C. N. G. Butt, S. A. Cohen, William Johnston, W. E. Holt, S. Wittkowsky and G. E. Wilson.

A COTTON-MILL company was organized at Statesville, N. C., on the 27th of January, and arrangements will be made for the early commencement of work on the necessary buildings. Mr. D. A. Tompkins, of Charlotte, was instrumental in the forma-

tion of the new concern, which will be known as the Statesville Cotton Mill Co. The following, together with Mr. Tompkins, have been chosen directors: T. D. Miller, William Wallace, M. R. Adams, J. W. Copeland, F. A. Sherrill, B. F. Long, N. B. Mills and J. K. Morrison. Capital to the amount of \$60,000 has been subscribed and will be paid for at the rate of fifty cents per share weekly, paying up in four years. This plan has been followed by several North Carolina concerns and proved eminently successful.

MR. J. L. CAMP, of Rome, Ga., will endeavor to organize a stock company to build a 10,000-spindle cotton factory.

THE Old Dominion Cotton Mills at Manchester, Va., will be rebuilt at once. This plant was partially destroyed by fire last week, causing a loss of about \$60,000.

THE parties who last spring proposed building a cotton mill at Settlemyer's Mills, N. C., near Mooresboro, held a meeting at Shelby on the 18th ultimo and appointed a committee to solicit subscriptions. Messrs. R. B. Miller, S. Settlemyer, J. S. Pruett, S. J. Hamrick (chairman), R. H. Green and J. V. Hambrick compose the committee.

THE long-projected cotton mill to be built on the Columbia (S. C.) Canal seems to be about to materialize, a commission for the incorporation of the Columbia Cotton Mill Co. having been issued on the 26th of January. Messrs. D. R. Sortwell, of Cambridge, Mass.; George Wallace, of Newtonville, Mass.; C. K. Oliver, of Baltimore, and B. L. Abney, of Columbia, are named as incorporators, and the capital stock is to be \$700,000 in shares of \$100 each.

It is said that New York parties intend building at Greensboro, N. C., a plant for finishing and bleaching cotton goods.

A BILL appropriating \$150,000 for machinery for a cotton and woolen mill for the Rusk or Huntsville penitentiary has been introduced in the Texas legislature.

THE Barnesville (Ga.) Manufacturing Co.'s stockholders held their annual meeting last week, and reports for the past seven months showed that the factory made net earnings of \$8000.

AT the annual meeting of the stockholders of the Sweetwater (Tenn.) Woolen Mill Co. held recently, the business was shown to be in an excellent condition and that of the past year as highly creditable. The following board of directors was elected: John M. Jones, R. F. Scruggs, J. M. Heiskell, J. H. Patton, James May, R. D. Hutchinson, W. F. Hutchinson, W. L. Hudson, W. P. Willson, W. H. Smith and W. L. Clark.

THE valuable water-power of the Deep river, in North Carolina, is about to be utilized for cotton-factory purposes by a company now organizing. Messrs. J. M. Odell, W. R. Odell, O. C. Bynum, J. H. Wissler, Wm. W. Lobdell, of Wilmington, Del.; J. M. Heck and Jno. C. Winder are the incorporators of the new concern, and have chosen the following officers: W. R. Odell, president; Mr. Wissler, vice-president, and Mr. Bynum, secretary and treasurer. The company has purchased the 5000 horse-power water-power at Lockville, together with adjacent properties, and will build a first-class plant.

Rice in Florida.

Messrs. R. C. Barkley and R. C. Harleston, of Charleston, S. C., have leased 2000 acres of rice land for five years from the Hamilton Disston Investment Co. They will take a skilled force of hands to work the property, and will go extensively into the cultivation of rice. The property leased is in the vicinity of Lake Tohopekaliga, Fla., and has, it is said, never produced less than seventy-five bushels of rice to the acre.

PHOSPHATES.

The Fertilizer Outlook.

The prevailing opinion among manufacturers of fertilizers is that the demand during the coming season will be more brisk, and the prospects are that quite an advance on last year's prices will rule. Some houses in Charleston are confirmed in this opinion, and the offerings are consequently light. The estimate is that the supply left over from last year together with that manufactured this season will aggregate 250,000 to 275,000 tons, and the opinion prevails that there will be a demand for almost all if not the entire output. From *Bradstreet's* of the 28th ult. the following movement in fertilizers for last year will be of interest as showing the total business done in this line:

	Tons.
North Carolina (official).....	250,000
South Carolina (official).....	124,500
Alabama (official).....	75,500
Georgia (official).....	170,000
Florida (official).....	25,000
Tennessee (official).....	10,000
Mississippi (official).....	40,000
Louisiana (official).....	10,000
Total.....	551,000

From authoritative information it is estimated that the output in various localities will be as follows:

	Tons.
Charleston.....	250,000
Interior Georgia and Savannah mills.....	161,000
Georgia Chemical and Pot Works.....	40,000
Wilmington.....	30,000
California and Darlington.....	21,000
Greenville.....	10,000
Charlotte.....	10,000
Jacksonville.....	10,000
Mobile.....	8,000
New Orleans.....	15,000
Richmond and Norfolk.....	30,000
Total.....	598,000

It will be seen by the figures, which are conservative and official, that if the demand is only about the same as last year there will be a surplus of less than 50,000 tons divided among all the works in eight States, and if the demand is about 8 per cent. greater than last year the entire supply will be exhausted, and if the demand is about 25 per cent. greater, as is generally believed will be, then the supply will not be sufficient to meet the demand, and the result will be that later in the season the price of fertilizers will be materially advanced.

Phosphate Markets.

OFFICE MANUFACTURERS' RECORD,
BALTIMORE, February 2.

The phosphate market is quiet, with the volume of business very meagre at present. Manufacturers are buying, however, and anticipate a very busy season in fertilizers. Under a milder temperature and the ice blockade broken business would revive. There are no arrivals reported for the week, and in charters there is a firmer feeling. A further advance of twenty-five cents has been accepted on rock from Bull river, S. C., to Baltimore. There is no change in values, and the list is about steady. Ashley river is quoted \$4.75 and Charleston \$5.00, and for distant future delivery \$3.50 and \$3.75 for 50 to 55 per cent. product. River rock is quoted \$4.75 f. o. b. for 58 to 60 per cent. product. Florida river pebble, 60 per cent. product, is steady at \$3.75 to \$4.00 f. o. b., and land pebble, 67 to 70 per cent. product, \$4.75 to \$5.00 f. o. b. Florida hard rock, 75 to 80 per cent. product, is quoted at \$7.50 f. o. b. Fernandina.

FERTILIZER INGREDIENTS.

There is a very light offering of stock, and the market is generally firm at all points. The demand is active, and prices remain unchanged. The quotations are as follows: Blood, 2.80@3.00 per unit f. o. b. Chicago; tankage, 7 per cent. of ammonia and 20 per cent. bone, \$32.00@ \$33.00 Baltimore; brimstone, best unmixed seconds, \$20.00@21.00 per ton of 2000 pounds; nitrate of soda, 2 1/4 cents per pound for spot and 2.15 to arrive; ground bone, \$28.00@30.00 per ton of 2000 pounds; dissolved South Carolina phosphate rock, \$11.00@12.00 per ton in bags for car lots;

dried fish scrap by cargo, \$28.00, and job lots, \$28.00@30.00; ground, \$35.00; wet and acidulated, \$18.00@20.00; dissolved bone black, 18 per cent., \$20.00@22.00; dissolved bone ash, 18 per cent., \$20.00@22.00; kainit, \$11.50@12.00 per ton of 2000 pounds in bags; muriate of potash, \$1.77 1/2 per 100 pounds of 80 per cent. in lots not less than fifty tons for 1893, and 5 cents additional for ice risk during winter.

CHARLESTON, S. C., January 30.

The phosphate market shows symptoms of greater activity, and under the increased demand in prospect for fertilizers it is thought that the rock market will improve. The severe weather which has prevailed for several weeks has restricted shipments, and under a milder temperature business will increase. The clearances for the week were as follows: The schooner James E. Bayles, for New York, with 600 tons of rock, and the schooner Laura E. Messer, for Weymouth, with 630 tons. The steamship Cherokee, for New York, took 200 tons of ground rock. In the list of values there is no improvement, and prices are quoted about steady at \$3.75 to \$4.00 for crude rock f. o. b., and hot-air-dried \$4.75 f. o. b. Ground rock is quoted \$7.50 f. o. b. in bags. Phosphate freights are unchanged, and rates are still quoted \$2.25 Ashley River to New York, \$1.90 Richmond, Va., and \$1.80 to Baltimore.

The comparative exports of crude phosphate rock and ground from the port of Charleston from September 1, 1892, to January 27, 1893, and for the corresponding period in 1891 are tabulated as follows:

Destination.	1892-93.		1891-92.	
	Crude.	Ground	Crude.	Ground
Baltimore.....	16,180	.....	22,215	.....
Philadelphia.....	8,831	.....	5,626	.....
Boston.....	.....	.....	.....	.....
Elizabethport.....	.....	.....	.....	.....
Wilmington, Del.....	2,078	.....	600	741
Barren Is., N. Y.....	.....	.....	1,085	.....
New York.....	4,118	1,326	3,755	688
Manua creek.....	1,319	.....	.....	.....
Weymouth.....	6,690	.....	7,140	.....
Richmond.....	4,449	.....	3,151	.....
Seaford, Del.....	600	.....	600	.....
Newton ck., N. J.....	1,078	.....	1,078	.....
Wilmington, N. C.....	665	.....	450	.....
Welsh Point.....	.....	.....	350	.....
Orient, L. I.....	.....	.....	.....	.....
Other ports.....	2,790	.....	2,490	300
Total exports.....	48,195	1,326	48,540	1,729
Foreign ports.....	175	.....	392	.....
Grand totals.....	48,373	1,326	48,932	1,729

FERTILIZERS.

The fertilizer market continues to show a marked improvement in the volume of business compared to last year, and the figures for the current year will approach those of the period of the greatest activity in fertilizers. At the moment shipments are not as brisk as they were some days ago, owing to the severe weather throughout the State and territory covered by Charleston houses. The total shipments to date show a substantial increase over the corresponding period last year. The freight departments of the several railroads show that a large number of cars are being used in the fertilizer trade. The South Carolina Railway has shipped up to date over 900 cars of fertilizer more than during the same period in 1892, and the other roads show a proportionate increase.

FERNANDINA, FLA., January 28.

There is considerable activity in phosphate circles at this port, and the business of the current year is likely to show a large increase in exports over 1892. Phosphate shippers are generally in good spirits, prices having recently advanced, and the demand has been greater than expected thus far during the current month. The steamships Rex, Lockwood and Indian Prince have all sailed this month with full cargoes, and there will be six or seven large steamships in port during the next ten days to load the product. One firm here it is

said has a standing order to ship 5000 tons per month until next November. The outlook at all Florida ports is good for shipping, and both Brunswick and Savannah will come in for a full share. It is said that Fernandina will probably ship 200,000 tons of phosphate rock during 1893 and that Brunswick will ship at least 60,000 tons. The steamship Oaklands has left Charleston for this port and will take out a full cargo of phosphate. The steamship Indian Prince finished loading last week and left with 1520 tons of phosphate for Valencia, Spain, shipped by the Marion Company, and will complete her cargo at Savannah. The steamship Lockwood, with 1175 tons of phosphate, left several days ago for Brunswick, Ga., and will finish her cargo with cotton at that port. The steamship Resolven cleared yesterday with 1926 tons of phosphate direct to Hamburg.

PORT TAMPA, FLA., January 30.

The present indications in regard to the phosphate business of Port Tampa are very encouraging to phosphate shippers. There is at present considerable activity here, and vessels are entering and clearing with phosphate cargoes every week. The Plant Company are going ahead with their improvements, and from the extensive work in progress it is safe to say that the phosphate business is growing in volume very rapidly. The Plant Company have just ordered sixteen additional side tracks built in the yard on which to place cars loaded with rock. We understand that the immense dredge Pico, built at Mobile, was successfully launched last week, and the machinery is being placed upon it as rapidly as possible. These improvements when completed will give us a safe harbor, with plenty of water for the largest vessels. Among the vessels cleared during the past week was the big four-masted schooner J. R. Teal loaded with phosphate rock and bound for Baltimore.

Foreign Phosphate Markets.

LONDON, January 20.

The phosphate and fertilizer market shows very little improvement, and a review of the business of 1892 shows a year pregnant with losses in fertilizer manufacturing and phosphate mining. At the moment there is very little demand, and the present visible supply is unusually large, both in the home and American markets, so that prices are easy, but not quotably lower. Messrs. Couper, Millar & Co., in their circular of the 17th inst., say: "Prices are lower today than they have ever been, and last year's phosphate mining, taken as a whole, must certainly leave a large loss. The Canadian industry has been almost annihilated, while the Somme and Liege districts have produced less than half the quantity of their normal capacity. In Florida and South Carolina the production has increased, but the prices obtained for the output have been far from satisfactory. The air is full of proposed combinations and restrictions of output, but owing doubtless to conflicting interests, difficulties in the way of arriving at an arrangement suitable to the more important companies, and, above all, owing to the want of the necessary funds, no arrangement has as yet been concluded. It is to be hoped, however, that this year will reveal some means of arriving at a solution of the difficulties, for with a slight increase in price, and a supply in view which does not threaten continually to swamp the market, there is no doubt but that the mining and manufacturing industries of the fertilizer trade would at once give much more satisfactory returns." The following quotations, as revised by Couper, Millar & Co., are current in the market at this date: Mineral phosphates are practically unchanged; South Carolina phosphates freely sold at 6d. per unit, and still offered at that figure for early delivery

and 6 1/4 d. for future delivery; Florida hard rock, 75 per cent., offered at 8d., while river pebble, 60 per cent., is strongly held for 7d., and land pebble, testing about 68 per cent., would come at same figure; ground Somme 10 1/4 d. for 70 per cent. and 11 1/4 d. for 75 per cent., basis c. i. f. London, would mean business; ground Belgian is steady at about 5d. per unit. f. o. b. Quotations for bone ash are nominal at £3, bones £4 2s. 6d., and bone meal £4 to £4 2s. 6d. for good quality. Sulphate of ammonia is firm at about £10 5s. per ton. Today's price for nitrate of soda is £9 per ton in dock warehouse. In ammoniacal materials, fish guano, London make, is well sold forward at 9s. to 9s. 3d. per unit of ammonia and 1s. per unit of phosphate. Ground hoofs and horns have been sold in quantities at 8s. 6d. per unit, ex steamer London; muriate of potash £7 15s. per ton on basis of 80 per cent. in bags for 50-ton lots; kainit quoted 30s. in bulk f. o. b. Hamburg in 50-ton lots only.

Phosphate and Fertilizer Notes.

A NUMBER of men will be put to work during February mining phosphate at the Sharon mines, near Green Cove Springs, Fla.

THE steamship I. E. Lockwood arrived at Brunswick, Ga., on January 28 with 1175 tons of phosphate, and will complete her cargo with cotton at that port.

THE steamer Fearless broke her shaft last week in Charlotte Harbor, Fla., while towing phosphate to the ship at Boca Grande. She was towed back for repairs.

THE Pebble Phosphate Co., of Fort Myers, Fla., will finish loading their ship this week, her cargo consisting of 1800 tons. This is the first large shipment from here direct for Europe, and it is expected to be a success.

THE phosphate miners around Ocala, Fla., are making active preparations for a large output in 1893, and look for good prices. Mr. Davis, of Ocala, is interested in securing a fine exhibit at the World's Fair of Florida phosphates, and is working up the matter among phosphate men.

A PARTY of English capitalists are at Bartow, Fla., and are guests of Col. R. R. Foote. They are in Florida for the purpose of inspecting some of the magnificent properties controlled by Colonel Foote with a view to locating extensive plants thereon.

THE following is a comparative statement of the sales of fertilizer tags furnished by the Alabama Commissioner of Agriculture: For the season of 1892 to January 24th the sales amounted to \$13,904.25, and for 1893 to \$20,854.40. The heaviest increase is reported in the sales between January 1st and 10th.

T. L. MARQUIS has just completed the spur from the Florida Southern Railroad at Homeland, Fla., to the works of the Homeland Pebble Phosphate Co. on Peace river. This company will begin to ship phosphate at once, as they have a vessel now in to load.

THE steam dredge Pico, built at Mobile for the Tampa Investment Co., was launched last week at the yard of the Seaboard Manufacturing Co. She is one of the largest dredges in the country, and when fully equipped with her machinery will be a most powerful one. She will at once engage in the work of dredging a channel at Port Tampa one mile in length and 500 feet wide.

A CONTRACT was closed on the 24th ult. between a New York syndicate and H. F. Mayfield, of Bartow, Fla., to erect a 100-ton plant on the valuable land owned by the Foote Phosphate & Fertilizer Co. near that city. It will cost about \$12,000, and is to be one of the most simple and practical plants that has been erected in the State. The work will commence at once, and the plant will be finished by June 1st.

COAL AND COKE.

A Contribution to the Southern Coke Problem.

By Geo. W. Whyte.

II.

Learning that this investigation was under way, a firm very successful in its washing and concentrating plants, and one offering an efficient plan in general arrangement and mechanical design, made certain propositions of treatment. A strong guarantee is that which states, "the fine particles, from one-sixty-fourth to five-sixteenths inches, shall not contain more than 1 to 2 per cent. of ash over and above the fixed ash inherent in this coal," and that "the refuse shall contain not more than 2 to 3 per cent. of pure coal." There is, however, more latitude in such a guarantee than is at first apparent. While select pieces of coal show a fixed ash of 4 to 6 per cent., yet experiments have shown that on a practical scale a higher percentage of ash is essentially fixed, though strictly speaking it is not, and under fine, tedious, experimental tests could be materially reduced. A "pure coal" is also indefinite. If by such term a coal with say 5 per cent. of fixed ash is meant, then the problem of separation is easier than if we include under this head a coal with a considerably higher ash, which practically is a fixed ash. There is no question, however, but that the guarantee was made in good faith, and was justified by experience in treating difficult coals. Still, as laboratory work had now been completed and the conclusions based on it were as above given, successful treatment within the limits imposed by a commercial success was not a surety. However, fifty tons of coal were sent for practical test, and this test included the coking of the washed products. The tabulated returns of this washing and coking, with full analyses of washed products and coke, are very interesting, but we give simply the main results:

Loss of material.....	27.30 per cent.
Total coking coal recovered.....	72.70 "
Yield of coke.....	54.67 "
Ash in coke.....	14.5 "

These figures are nearer laboratory results than could be very well expected. The ash in coke is very close to the average shown in laboratory, while loss in coal is several per cent. higher. So far as experimental laboratory methods are concerned, these figures would indicate they are reliable as indicative of the best that can be attained on a large scale by separatory processes.

Having reached a conclusion as to the first two inquiries in this case, let us examine the commercial aspect of the same. In considering this phase of the matter we have gone into some heat calculations bearing on the available carbon in the poorer qualities of coal and on an ideal working of the furnace in fuel consumption. The assumption is a conversion of the carbon in the fuel into $\frac{2}{3}$ CO and $\frac{1}{3}$ CO₂. Under these conditions one pound of pure carbon or coke (no ash, etc.) will yield $\frac{1}{2}$ [(2400 X 2) + 8000] = 4266 $\frac{2}{3}$ heat units. The ash, etc., present in ordinary coke will reduce the available carbon in a given weight of coke by simple exclusion of it; but omitting the other factors usual in complete calculations, there are at least three other causes operating to still further diminish the efficiency of the available carbon for ore reduction, fusion, etc., viz.: 1st, the fusion of the slag formed by the ash with necessary flux; 2d, the decomposition of this flux, i. e., liberating its CO₂; and 3d, the reduction of the CO₂ thus liberated to CO.

Assuming as a working basis that the flux required (one-half calcite, one-half dolomite) is 810 pounds per 4500 pounds of coke, with, say, 20 per cent. of ash, this amount of coke will contain 900 pounds of

ash, whence 1 per cent. ash requires 9 per cent. of flux. The flux averages about 55 per cent. of slag-forming ingredients, hence each 1 per cent. of ash will form 15 per cent. of slag. A 20 per cent. ash coke will require, therefore, of flux 18 per cent. and will form of slag 30 per cent. of fuel charge.

Assuming the coke to consist of carbon and ash, then the carbon in one pound of such coke will yield..... 3413.4 h. u.
To fuse the slag formed would require..... 165.0 h. u.
To expel the CO₂ from the flux will require..... 66.6 "
To reduce this CO₂ is required..... 69.1 "
..... 300.7 h. u.

Heat evolved equal to..... 3112.6 "
Since one pound of C will yield under conditions assumed..... 4266.6 "
The loss occasioned by this 20 per cent. of ash equal to..... 1154.0 "

Equal to a loss of 1.352 per cent. on the heat yielded by unit weight of carbon for each 1 per cent. of ash. Therefore, the maximum amount of ash theoretically permissible in a coke which will meet its own heat requirements in caring for its flux and slag is 73.94 per cent. This with an assumed yield of 56 per cent. in coke represents a coal with 41.407 per cent. of ash.

Reference to the analyses given of the poorest portions in the three sections makes it appear that only two subdivisions are deficient in the carbon necessary to meet its own heat requirement. It is more than probable, however, that the ratio of efficiency and burden-carrying capacity to the ash would decrease very rapidly with increasing ash, and practically we should reach a limit in coke ash far below that above stated. It should be noted that all the high ash portions coked fairly well, and their proportion to the good coal is such that it is questionable whether their removal would give a gain in strength and other physical and chemical properties proportionate to the cost of such removal. By such removal the expense of mining and handling this poorer material is practically lost. Taking \$1.20 per ton as the cost of this coal delivered in the bunkers, the value of this high ash coal is twenty-nine cents per ton of coal mined. As effecting the furnace management, let us assume the coke now used as having an ash of 22 per cent., and that the washed coal will yield a coke with 14 per cent. of ash. Further assume these data: 1.7 tons of 22 per cent. ash coke is required per ton of iron, 4500 pounds of coke require 891 pounds of flux, flux has 55 per cent. of slag-forming ingredients. Then the 22 per cent. of ash will form 33 per cent. of slag, and require 19.8 per cent. of flux. The direct economy of this decrease of 8 per cent. in ash is, as before stated, the replacement of this amount of ash by 8 per cent. of carbon and the saving of the heat required to decompose the flux, reduce the CO₂ and fuse the slag of this 8 per cent. of ash.

Pounds of carbon.
1.7 pounds of 22 per cent. ash coke has..... 1.326
To care for slag and flux in this 1.7 pounds is required..... .131

Leaving as available for ore reduction, etc. 1.195

With a 14 per cent. ash coke it may be shown similarly that one pound of such coke has available for ore reduction, etc., .811 pounds of carbon. Since, therefore, one pound of pig iron requires 1.195 pounds of C supplied by 1.7 pounds of 22 per cent. ash coke, then 1.47 pounds of 14 per cent. ash coke will yield the requisite carbon, and a fuel economy of 13.53 per cent. is attained by use of better coke. Assuming a yield of 56 per cent. in coke and a loss of at least 20 per cent. by washing the coal, then:

1.47 tons of 14 per cent. ash coke requires 3.28 tons of coal.

1.7 tons of 22 per cent. ash coke requires 3.03 tons of coal.

14 per cent. ash coke.	22 per cent. ash coke.
3.28 tons at \$1.20..... \$3.94	3.03 tons at \$1.20..... \$3.64
2.62 tons coked at 50 1 31	3.03 tons coked at 50 1 31
\$5 25	\$5 15

Less value of 225 lbs. of flux saved at 65 cents..... 07
Difference..... 03

To this difference must be added labor for washing, depreciation and repairs on plant, power, interest on investment, royalties, etc. Would this pay? The character of the local demand for coal is such that the washed coal offered for domestic and other purposes would command no advanced figure. Even if it did, the return from such source would form a small figure in the advantages accruing from the outlay for purifying it. The chief value in this case lies in the probable increased yield of the furnaces from improved quality of coke and in the improved working conditions. Undoubtedly there would be gain from the better physical body of coke, harder, little denser, and with a smaller percentage of "smalls" in the handling. It would have probably greater burden-bearing capacity, both in weight of materials carried and increased duty obtained per unit of fuel.

So far as these experiments show, however, it is a question whether the increased benefit in this direction would compensate for the interest, etc., on first cost of plant and repay the capital expenditure. Certainly we have assumed in the calculations a working condition which will be attained in neither case, but to which the coke from washed coal will approximate more closely than present fuel, a feature which trial alone can satisfactorily determine. It may be also noted that if 20 to 22 per cent. of output is removed from 800 tons, 160 tons of refuse must be carried away, requiring more or less water. This is a circumstance which, while it may be avoided largely, yet is of interest in a region where water supply is very scanty during certain months of the year, and which can be remedied only by further expenditure for either pumping apparatus or reservoirs.

While, therefore, the washing plant may be a thoroughly efficient one, and could show better results on longer runs, yielding a lower ash with less loss, yet the recommendation made would be the purchase of better fuel for a trial of the extent of improvement in working conditions before the large outlay is made for the installation of a washing plant.

Alabama Coke for Mexico.

The American schooner Luther M. Reynolds, which was loading with coke on January 24 at Mobile, Ala., has since cleared with her cargo for San Luis Potosi via Tampico. The cargo consisted of 500 tons of coke from the Mary Lee Coal & Railway Co. at Birmingham, and is the first cargo of Alabama coke ever shipped from this port. Several thousand tons more are expected by the Mobile & Birmingham Railway, and vessels are daily expected at this port to load coke for Mexican ports. The schooner Ella M. Willey also cleared for Galveston with a cargo of coal from the Mary Lee mines. The above shipments are but the beginning of what promises to be a large coal and coke export from the Alabama mines.

Coal Export Trade at Mobile.

Among the vessels now at Mobile loading with coal and coke are the following: Steamship Canawa, loading coke for Tampico, with two schooners as tenders; also loading coal and coke for Galveston. The schooner Cornell is loading coal under a charter of the Export Coal Co., of Pensacola, and the Grace K. Green taking cargo of coal for Velasco, Texas. Mr. F. B. Clarke, who is at the head of the sales department of the Mary Lee Coal & Railway Co. and general agent of the International Coal & Transportation Co., with headquarters in New Orleans, was in Mobile last week making arrangements for the export of coke. He says his company, in connection with the Memphis & Birmingham Railway, will shortly erect a coal tippie in Mobile with a capacity of 40,000 tons per day. They have also closed a contract with the Harrison Steamship's Co.

line between Liverpool and New Orleans to carry coal and coke. This is the first contract that has ever been made with foreign steamers to carry Southern coal.

Cumberland Coal Shipments.

The shipments of coal from the Cumberland region for the week ended January 28 and for the year to that date have been as follows:

Companies.	Week. Tons.	Year. Tons.
Borden Mining Co.....	3,515.12	11,190.07
Consolidation Coal Co.....	17,370.17	60,614.16
Union Mine.....	2,704.04	11,707.19
George's Creek Coal & Iron Co.....	6,508.16	24,408.01
Swanton Mining Co.....	1,863.08	8,556.02
Potomac Coal Co.....	1,080.18	5,170.17
Franklin Cons. Coal Co.....	928.08	2,311.06
Piedmont Cumb. Coal Co.		
Barton & George's Creek Valley Coal Co.....	3,134.04	14,720.18
Big Vein Coal Co.....	1,127.10	4,123.03
Anthony Mining Co.....	405.18	1,134.18
W. Va. C. & F. (Elk Garden Mines).....	6,262.19	18,238.06
Atlantic & George's Crk Coal Co.....	656.07	2,639.07
Davis Coal & Coke Co.....	1,246.00	5,477.00
Thomas Mine.....	2,254.06	7,400.03
Davis and Elkin Mine.....	1,714.13	6,568.14
Cumb. Coal Co. (Douglas Mine).....	612.00	3,340.00
Elk Garden Big Vein Mining Co.....	641.03	1,341.05
Hampshire Mine.....	1,067.10	3,670.05
Big Vein Coal Co.....		190.00
American Coal Co.....	3,079.15	12,673.17
Maryland Coal Co.....	2,025.01	9,683.06
New Central Coal Co.....	2,468.12	7,794.00
Total.....	60,668.03	
Previously.....	162,296.07	
Aggregate.....	222,964.10	222,964.10

COKE SHIPMENTS OVER WEST VIRGINIA CENTRAL & PITTSBURG RAILWAY.

Companies.	Week. Tons.	Year. Tons.
Davis Coal & Coke Co.....	1,012.00	5,554.00
Thomas Coke Ovens.....	228.00	745.07
Cumberland Coal Co.....	261.00	1,104.00
Total for week.....	1,521.00	
Previously for year.....	5,682.07	
Year to date.....	7,203.07	7,203.07
Same period last year.....		5,906.19

Coal and Coke Notes.

In Marion county, W. Va., near Fairmont, the Virginia & Pittsburgh Coal Co. has opened and equipped a complete mine. The vein is about six and a-half feet thick.

The Mingo Mountain Coal & Coke Co., of Middlesborough, Ky., has received an order from Montana for ten cars of coke.

CORNELIUS WARDEN is about to open a coal mine near Pulaski, Va. He has discovered a fine vein of semi-anthracite on his property which seems to be of fine quality, and it is about seven feet thick and several feet wide at the opening.

THE Logan Cannel Coal Co., recently chartered in West Virginia, has organized at Huntington by the election of S. S. Vinson as president; Thos. H. Harvey, secretary and treasurer, and the following directors: S. S. Vinson, Z. T. Vinson, Thos. H. Harvey, Beryl Pridie and H. C. Harvey. The property which the company proposes to develop consists of 4000 acres of coal and timber lands in Logan county, on the Norfolk & Western Railroad. It contains three workable veins of both cannel and bituminous coal.

C. D. PETTIS, of Chattanooga, Tenn., president of the American Car Co., has recently effected an arrangement with Isaac Witz, president of the Basic City (Va.) Car Works Co., by which the extensive plant at Basic City will commence operations. Mr. Pettis is now at Basic City employing hands and completing arrangements for the manufacture of cars. The plant, which is equipped with improved machinery, will give employment to 200 men and will turn out seven freight cars per day. Contracts have already been signed to build a large number of cars for the Chesapeake & Ohio Railway at an early date. The people of Basic City feel much elated at the prospect, and rents have advanced materially.

RAILROAD NEWS.

[A complete record of all new railroad building in the South will be found in the Construction Department, on page 19.]

The News of Wall Street.

[From our own Correspondent.]

NEW YORK, February 1.

While the flurry in Whiskey and Sugar stocks have increased the volume of business and attracted much attention in the street the past week, the general market has been little, if any, affected by the drop in these stocks, which was the result primarily of manipulation by "insiders." The howl against the business immorality of the transactions, which operated to bring about this decline, continues, and is a most amusing feature to the disinterested observer. Anyone would think that the tricks of insiders to "rig" the market and come out winner after "bulling" their stocks, getting outsiders in, and then permitting disclosures to come out which would make the lambs drop their long holdings was a new one invented by the wicked operators in industrial shares, and that big railway speculators would never stoop to take such an unfair advantage of a confiding public. In point of fact this has been a favorite trick of the engineers of bull pools. Could it first in Erie, and did it clumsily, by means of a fraudulent issue of new stock. Operators in Richmond Terminal in past years have done it by bulling the stock and then suddenly allowing attention to the always shaky finances of the concern to be called by some petty default, or by some insider announcing his disgust with the management, or by getting the facts before the public in some seemingly sincere manner.

To be sure, the insiders from Peoria, who have beaten some heavy Wall street manipulators at their own game, have added some embroidery to this old cloak that so many financial geni have worn, and the old-timers whom they fooled have just cause to be "sore." It hurts to lose money. But it hurts worse to think that you have a lot of unsophisticated grangers from the West right where you want them and find yourself caught in your own trap. Hence the feeling over the tremendous fall in Distilling and Cattle-feeding Company shares is more bitter and more loudly expressed than ever.

The facts back of the fall in Whiskey and Sugar shares in the past week are interesting and somewhat independent, though corroborative, of these observations. There is no doubt that the Peoria clique, interested in and practical controllers of the business of the Whiskey Trust, came to New York, and after the stock had become popularized as a good gamble, invited a number of very large New York operators to assist them in putting up the price. They may have satisfied them that the Distilling and Cattle-feeding Company was going to be in a position of making a great deal of money. At all events a myth was put out that seemed at that time to many capable of being proved a reality. This was the story—that Congress would put an additional tax on spirits in order to make an increase in revenue, which would be necessary under a reform of the tariff. At all events, the news was circulated that the trust and those interested were engaged in a corner in the manufactured product now lying in bond, which would be subject to the old tax, but marketable at the higher price which the new tax would immediately cause. Very well. The rise in Whiskey shares began. The New York operators bought heavily. They soon found that what seemed to be a bear movement by operators selling large quantities of short stock (which would be just what a bull pool would most desire) was really their innocent and guileless Western friends unloading their own holdings upon

them. There was a row right then and there, but it was too late for revenge. The New York bulls were left to tread out the wine press alone. Prices began to yield slightly, and they had to do what they could to support them.

Next step, after the split of the pool into two, a New York bull and a Western animal that looked more like a bear than a lamb, was the discovery that the speculation in proof spirits consisted in the diversion of \$4,000,000 of a quasi trust fund held by the trust for the purpose of redeeming rebate checks given to dealers who promised to handle none but trust distillers' product. This would indicate that, now that the higher tax on spirits would not in all probability be laid, the trust would find it difficult to meet these obligations to its customers, and that a receiver might be asked for by dissatisfied stockholders who saw their dividends frittered away. I am not saying that the trust is insolvent, or likely to become so, but the loss or diversion of \$4,000,000 of assets held against liabilities from that to another purpose is enough to shake public confidence in the management of any corporation. So down went the price of shares. I am given to understand that this decline was postponed until the New York crowd was enabled to unload on the public without great loss, and that as a consequence the clamor against the gentlemen from Peoria is inspired first by the wails of the New York gentlemen over profits they didn't make, and by the public, which is the real loser.

Apropos, there is a similar ruction among recent bulls in Mr. Tennessee Coal & Iron Platt's stock. T. C. & I. stood at 40 not long ago, and Wall-street gossip had it that Mr. Platt had given out the tip that the stock was sure to rise. A bull pool of Southern gentlemen was formed on the strength of this, and finding that there was more stock on the market for sale than they could buy, wondered what Mr. Platt was doing to support the stock. They found, it is said, that he was obligingly supplying them with all they wanted. The price dropped to 35 or thereabouts. I understand that the Southern gentlemen are struggling under the load and pluckily trying to get it back to where they bought it.

The fall in Sugar is due to similar operations by insiders, who, it is said, expect "unfavorable legislative action."

The general market while these gigantic battles have been going on has held its own well. Many stocks advanced while the panic in Whiskey and Sugar was at its height. Tobacco, I think, would have held its own, too, but for the general feeling that all the industrials were a good sale, though Cordage was well taken care of. The purchases of our bonds, especially for English account, was a most encouraging feature. The unimportant character of the decline in the industrials, with regard to general market conditions, is shown by the fact that there were no failures from this panic. Call money is as cheap as 2 per cent., and plenty is offered. The banks' position, in spite of continued gold exports, was stronger, as shown by Saturday's bank statement, than the week before. The reserve has been greatly strengthened, and the probable early repeal of the Sherman act breeds confidence.

There were many rumors with regard to the Richmond Terminal-Georgia Central litigation, but no news came out. One report had it that the two conflicting interests had come to an amicable agreement by which all litigation could be put a stop to. It hardly needed Mr. Oakman's emphatic denial to assure anyone who had read his letter which I summarized last week that this was a funny story. Another report that Georgia Central or Louisville & Nashville interests would obtain control of the Richmond Terminal was not confirmed by any authority.

An Anti-Railroad Bill Killed.

A railroad bill that would have proved especially onerous to the railroads of Alabama has been fortunately defeated in its passage through the legislature of that State. The bill aimed to compel submission to the rulings of the State railroad commission, and provided that any company or person operating a railroad in the State refusing or failing to carry into effect any freight or passenger rate fixed by the commission, shall be guilty of misdemeanor and subject on conviction to a fine not exceeding \$1000. There seemed to be a strong desire to fasten such a menacing law upon the already burdened railroads of the State, but the opposition, led by a few broad-minded men, effectually checked the plans of the would-be railroad regulators. Representative Ferguson, one of the opponents of the bill, presented a logical statement of the actual position of the railroads of the State. One fact he demonstrated worthy of consideration was that the railroads pay about one-fifth of the taxes of the State, and are as much entitled to the protection of the legislature as any other taxpayer.

Extension Under Way.

The Florida Central & Peninsular is placing on record a first consolidated mortgage for \$7,800,000 with the New York Guarantee & Indemnity Co. as trustee. This company has work under active headway on its extension from Hart's Road, Fla., to Savannah, Ga., and 700 men are now at work grading the northern division from Savannah to the Altamaha river. The grading is already completed between Savannah and the Ogeechee river. Major W. S. Green, chief engineer of the road, states that it is expected to complete the grading along the entire line within three months. The line runs mostly through a level pine country, avoiding the swamps and requiring but very little trestle work. There will be four steel drawbridges to be constructed to cross the Ogeechee, Altamaha, Satilla and St. Mary's rivers. The company will arrange for ample terminals in Savannah, including water frontage.

Receiver for the Port Royal & Augusta.

The message Governor Tillman sent to the South Carolina legislature in November last advising legal proceedings against the Georgia Central to prevent the continuance of its control of the Port Royal & Augusta Railroad, and the subsequent action of the legislature instructing the State's attorney-general to take suitable steps, has resulted in the placing of the road in the hands of J. H. Averill as temporary receiver. The petition was filed in behalf of the State of South Carolina against the Port Royal Railroad Co. The averments covered abuse of its franchises, illegal control exercised over it by a foreign competing corporation and the abandonment of its control to Receiver Comer, whose appointment, it was held, so far as the Port Royal was concerned, was made without due cause. An injunction was prayed for to prevent the continuance of this control, asking the appointment of a receiver and, failing any other relief, the forfeiture of the charter.

Mr. Averill as receiver of the Port Royal & Augusta has already taken steps to secure the property by filing a petition asking that the order of the court appointing H. M. Comer, of the Georgia Central Railroad & Banking Co., receiver of the Port Royal & Augusta road, be rescinded, and that the property and franchises of the latter road be turned over to the petitioner.

The grounds of the petition are that Comer's appointment as receiver of a competing line to the Central was illegal and void. The court issued a rule to show cause on February 14 why the petition

should not be granted, argument to be heard February 21, when a lively legal tilt is anticipated.

Railroad Notes.

THE contract has been closed by the Illinois Central with the American Express Co. for operating the express business over the entire line of its road. This arrangement goes into effect on March 1.

THE holders of seventy-nine of the first mortgage land-grant and income bonds of the Texas & St. Louis Railway Co., numbering between 512 and 840, are notified by J. H. Finks, clerk of the United States Circuit Court at Waco, Texas, to present and file same in that court in order to receive the dividends declared due on said bonds.

THE Baltimore & Ohio has in regular service 870 locomotives, about 30,000 freight cars and about 700 passenger coaches, representing a capital of about \$16,000,000.

THE Mercantile Trust Co. of New York gives notice to the holders of the securities of the Central Railroad & Banking Co. of Georgia and its allied properties that it will be prepared to receive deposits of the securities on and after February 8th next of the companies embraced in the plan of reorganization, and issue therefor its certificates under and pursuant to the agreement adopted by the reorganization committee.

THE annual meetings of the St. Louis, Iron Mountain & Southern and the Missouri Pacific will be held in St. Louis on March 14. Directors are to be elected.

THE New York Stock Exchange has listed \$1,072,000 additional Louisville & Nashville unified 50-year 4 per cent. gold bonds, making total listed to date \$9,822,000; also \$65,000 additional Norfolk & Western 5 per cent. 100-year mortgage gold bonds.

THE construction department of the Louisville & Nashville has turned over the new Clarksville Mineral branch, running from Clarksville to Dickson, to the transportation department for operation.

AT the annual meeting of the Natchez, Red River & Texas Railroad held at Natchez, Miss., on January 26, the following officers were elected: President and treasurer, Hugh Porter, of New York; vice-president and general manager, C. A. Gardner, of Vidalia; secretary, Wm. H. Murphy, of New York. The outlook for business for the coming year is considered especially bright.

T. S. MOISE has been appointed superintendent of the Savannah & Western division of the Central Railroad of Georgia, with office at Columbus, Ga.

PETITIONS have been filed by non-resident claimants seeking to transfer the litigation of the Savannah, Americus & Montgomery from the Sumter county (Ga.) court to the United States Circuit Court. This is believed to be in line with a movement to dissolve the receivership as now constituted and have a new one created by the United States Court. The receivers are S. H. Hawkins, of Americus, Ga., and T. Edward Hambleton, of Baltimore.

THE Waco & Northwestern Railroad has made these appointments: P. A. Gorman, general manager; J. E. W. Fields, general freight and passenger agent; Thomas Dugelty, auditor, and John M. O'Connor, treasurer.

AT the recent meeting of the stockholders of the Gulf, Western Texas & Pacific and of the New York, Texas & Mexican Railway Companies, held in Victoria, Texas, directors for both companies were elected as follows: C. P. Huntington, J. Kruttschnitt, M. D. Monseratt, W. G. Van Vleck, D. C. Proctor and A. Da Costa. The directors elected the following officers: President, J. Kruttschnitt; vice-president, M. D. Monseratt; secretary, C. D. Wells; treasurer, W. J. Craig.

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BALTIMORE, FEBRUARY 3, 1893.

Notice to Advertisers.

*The last forms containing advertisements
are closed on Tuesday afternoon. New adver-
tisements or changes should be received not
later than Tuesday noon to ensure attention
in the issue bearing date of the following
Friday. Reading matter should be in our
office on Wednesday, although late news can
be received early Thursday morning.*

THE resignation of Mr. Charles G. Eddy, vice-president of the Norfolk & Western Railroad, and his accession to the second vice-presidency of the Philadelphia & Reading Railroad, removes from the Southern field one who has long been actively and faithfully devoted to the promotion of Southern interests, particularly in the Virginias. Mr. Eddy's new position places him close to the head of a great railroad corporation which is just now the most conspicuous figure among American railroads, but this gain to Pennsylvania and the East is a distinct loss to the South. We witness Mr. Eddy's departure from Virginia with much regret, but send with him to his new sphere of activity our best wishes.

It is with the deepest regret that we learn of the short-sighted action of the Alabama legislature in passing the bill against the geological survey, to which reference was made in our issue of December 16th. At that time the bill had just been presented, and we gave good reasons why it should not become a law, and expressed the hope that those who favored such a measure of questionable economy would, before the final reading, be enabled to see that they were trying to suppress one of the most important means by which the resources of the State might become more widely known and be further developed. Unfortunately they have failed to give the matter due consideration, and the bill as passed appropriates the beggarly sum of \$500 annually for two years to defray all expenses and salaries of the

survey, thus practically extinguishing it. With due respect to the gentlemen forming the legislature, such action cannot be considered as indicative of intelligent foresight or even of rational reasoning.

THE report upon the resources of Tennessee, which has recently been issued by D. G. Godwin, commissioner of agriculture of that State, is a most welcome addition to the meagre authoritative information which has hitherto been obtainable regarding the matters of which it treats. While the means available were not sufficient to enable the commissioner to treat the subject in as exhaustive a manner as is desirable, the work done is a great improvement over all previous publications from the same source and will be of infinite service in aiding to spread knowledge as to the State's bountiful resources. In the same line of progress is a bill recently introduced in the Tennessee legislature providing for the addition of two assistants to the bureau of labor, one for mine and the other for factory inspection, and increasing the appropriation for the bureau from \$4000 per annum to \$10,000. This bill deserves hearty support, as does every other measure leading toward similar ends.

DURING the past week announcement has been made of a further triumph of the direct trade movement which Col. I. W. Avery has been so energetically engineering in behalf of the South. Mr. K. Sando, of London, England, has cabled that the contract has been signed for the establishment of a line of first-class steamships which will run from Savannah or Brunswick, Ga., to English ports. This scheme involves the establishment of a steamship line, with a bank of large capital at the Southern terminus of the line to facilitate the handling of foreign trade. This accomplishment is of immense importance to the South, but it is only one in a series of events that are placing the South upon a broader and more substantial commercial footing than has ever existed before. The era of direct trade approaches rapidly, and the fulfillment of this long-cherished desire will afford a great stimulus to Southern commerce and industry. The South has the harbors, the railroads and the agricultural and industrial products. The utilization of this opportunity, which has so long existed, means very much to the South and to those who are engaging in direct trade enterprises.

Tennessee's Convict Problem.

The first message sent to the Tennessee legislature by the recently inaugurated executive, Governor Turney, contains a reference to the employment of convicts in mines which will hardly meet the views of the citizens of that State. He says:

I suggest that a large coal-field on a mountain be selected and purchased, and upon it the prison erected, with a view to coal-mining by such convicts as the legislature may designate.

We should begin at once, so as to be prepared to take care of all convicts in a comfortable prison or prisons at the termination of the present lease, which will expire in January, 1896, giving good time to perfect any plan that may be adopted.

The labor of convicts should be so employed as to interfere as little as possible with free labor, and at the same time save the State from the cost of supporting criminals. Such burdens should not be imposed on the taxpayers who support the government and are entitled to its protection. No legislation can be had now as to the lease

without the consent of the lessees. It is a contract, a law of the land, and must be enforced. All attempts to avoid it by force must be checked and the wrongdoer punished.

It was supposed that Governor Turney was strongly opposed to the present convict lease system, and particularly their employment in mines, where they competed directly with free labor, and there was a general expectation that upon coming into office he would endeavor to abrogate existing leases as soon as provision could be made for taking care of the convicts. Apparently he has no such intention in view, and though further on in the message he calls attention to the failure of existing road laws to keep highways in satisfactory condition and gives cogent reasons why better roads are desirable, indeed necessary, still he fails to connect the two questions and does not appear to realize that economical convict maintenance meets a readier solution in the construction, improvement and preservation of highways and country roads than by any other means at present available.

Iron and Steel Production in 1892.

The statistics of iron and steel production in 1892, as collected by the American Iron and Steel Association, show in both a marked increase over the year 1891, and but little less than 1890. The production of pig iron in 1892 was 9,157,000 gross tons, as against 8,279,870 tons in 1891 and 9,202,703 tons in 1890. In the nine producing Southern States the production was 1,890,167 gross tons, against 1,708,966 in 1891 and 1,744,160 in 1890. Taking these by States, in Maryland the production decreased from 123,398 tons in 1891 to 99,131 in 1892. In Virginia there was, on the other hand, a considerable increase, from 295,292 in 1891 to 342,847 in 1892. North Carolina shows a decrease from 3217 in the former to 2908 in the last year. In Georgia there is a most considerable decrease, from 49,858 in 1891 to but 9950 in 1892. Alabama has increased from 795,673 in 1891 to 915,296 in 1892, a gain of 119,623 tons. Texas has fallen off from 18,662 in 1891 to 8613 in 1892. West Virginia shows the greatest proportionate increase of any, from 86,283 tons in 1891 to 154,793 tons in 1892. Kentucky shows a slight gain, from 44,844 in 1891 to 56,548 in 1892, and Tennessee from 291,738 in 1891 to 300,081 in 1892, the net increase over 1891 in all Southern States being 181,201 tons and 146,007 tons over 1890. In 1890 and 1891 Alabama ranked third as a pig-iron-producing State, but in 1892 it dropped to fourth, Illinois taking the third position. Virginia stands fifth and Tennessee seventh in the order of their production.

The most notable feature of the returns is in the heavy decrease in stocks on hand December 31, 1892. On December 31, 1891, the total stock amounted to 596,333 tons, whereas on the same date 1892 they were 506,116 tons, a decrease of 90,217 tons. This decrease is more significant when compared with the stocks at the end of the second and third quarters of the year, and indicates an unusually heavy consumption.

The statistics for Bessemer steel ingots show the production for 1892 to have been 4,160,972 gross tons, against 3,247,417 gross tons in 1891, an increase of 913,555 tons, and 472,101 tons greater

than the production of 1890. The production of Clapp-Griffith steel amounted to 67,526 tons, as against 65,389 tons in 1891. The total production of Bessemer steel rails in 1892 was 1,458,712 gross tons, as against 1,239,393 tons in 1891, an increase of 219,350 tons, but still 338,746 tons less than the production of 1890.

Discrimination Against American Marble.

The specification of foreign marbles for the interior finish of the Congressional Library in the contracts which have recently been let has aroused a storm of protest from American quarrymen. The total amount of these contracts is about \$638,000, of which \$600,000 is for Italian and foreign colored marble. There is an item of \$30,000 for Vermont marble, one of \$5500 for Georgia marble and the insignificant amount of \$3100 for Tennessee marble. Apart from the inconsistency of this choice of stone by a Republican administration, which placed a tariff upon imported marbles for the expressed purpose of protecting the American industry, there is cause for complaint in the neglect of this opportunity to make use of home resources which offer every advantage that is presented abroad. The Tennessee quarrymen feel that they have a special grievance in this action of the government authorities, and their complaint of unjust discrimination is well founded.

So far as appears from the controversy which has resulted, there seems to be no ground for the selection of foreign marbles in preference to the American product other than the fancy of the officials in charge of the construction of the Congressional Library. It would seem far more fitting that this magnificent building should have its interior decorations constructed from American stone, even if such a course should necessitate some additional expense. In point of quality nothing can be said against the American marbles in behalf of the foreign stone. The beautiful marbles of Tennessee enjoy a reputation which ought to entitle them to selection for such a purpose apart from all considerations of cost and public policy. The Tennessee quarrymen claim that they can furnish stone at prices paid for the foreign product, and of a superior quality, durability and color, and under such circumstances there is every reason why the American product should have the preference over all others. This discrimination against American products is another illustration of the inconsistency of our government, which imposes a protective tariff upon foreign products for the fostering of American industries and then makes purchases for its own uses in foreign markets.

The circumstances in the present instance are practically identical with the conditions surrounding the selection of white enameled brick for the same building about four years ago. The specifications for brick were drawn in such a way as to exclude entirely American manufacturers from competition, although several of them were anxious to present bids for the bricks. Protests which were entered at that time against the purchase of foreign bricks were unavailing. We hope, however, that the vigorous protests which have been made by marble producers in Tennessee and

Vermont and by members of Congress may be of some avail in the present instance.

Moving Mills to the Cotton.

In our issue of last week we commented upon the rumored intention of the Massachusetts Cotton Mills Corporation, of Lowell, Mass., to extend its business by the establishment of a new mill at some Southern point. Further developments establish beyond doubt the purpose of this company. The committee on mercantile affairs of the Massachusetts legislature gave a hearing last Monday upon a petition of this company for permission to increase its capital stock. The capital stock is now \$1,500,000, and the corporation desires permission to increase this amount to \$3,000,000. Before the legislative committee Mr. Charles F. Lovering, treasurer of the corporation, explained that the exigencies of business demanded a change; that an increase in capitalization was needed to improve the property of the company in Lowell and also to build another mill in some other part of the country outside of Massachusetts. The purpose of the company was to devote the present plant at Lowell to the manufacture of finer grades of goods, and in so doing increase the present pay-roll at least 20 per cent. Mr. Lovering testified further that the discrimination against Northern manufacturers made it imperative to build a new mill for the manufacture of the coarser grades of goods in a locality where the raw material could be more cheaply obtained. The exact location has not been determined, that being a matter for consideration when the desired increase of capital has been granted. This seems to establish beyond doubt the purpose of the company to branch out southward.

A move of this sort is in the natural course of events, and must be regarded as a wise policy. It is an unmistakable recognition of the fact that the South offers superior advantages for the manufacture of cotton goods. A successful move like this on the part of one great New England manufacturing company will be a powerful factor in inducing similar action on the part of many other Northern mills. The cotton manufacturing industry of the South is at present in one of its most interesting phases. The industry is growing rapidly, and every tendency is towards the use of better machinery and the production of higher grades of goods. The industry is prospering as never before, and the inducements that are presented for the extension of the industry and for the establishment of new mills are exceptionally inviting.

The annual election of officers and directors took place at the Mechanics, Dealers and Lumbermen's Exchange in New Orleans on the 9th inst. The election is usually formal in character, but this year there were two tickets in the field, and considerable excitement prevailed. The voting was lively, and the Aiken or regular ticket was the successful one, it being elected in its entirety. The officers and directors were as follows: James H. Aiken, president; A. S. Blaffer, vice-president, and A. W. Moffett, treasurer. For directors, H. Buddig, Charles Garvey, Fritz Jahncke, H. C. Gause, F. J. Mathew, Thomas Steen, Irwin Jamison, Alexander Huhn, Jr., and Eugene F. Buhler.

Improvements in Cotton Warehousing and Condensing.

MONTGOMERY, ALA., January 24.

Editor *Manufacturers' Record*:

The question of cheap insurance and economical handling of cotton in large trade centres is what is agitating the minds of the cotton factors today throughout the cotton belt. The existing rates of 2 to 3 per cent. upon cotton stored in warehouses is much too high, and coupled to this the drayage on cotton from the depot to the warehouses, from the warehouses, after it is sold, to the compress, and in some instances after it is compressed it is again drayed to the railroad or steamboat for shipment East or exported.

By these excessive and unnecessary charges the cotton factor is seeing his cotton trade growing smaller and smaller each year, and still no steps are being taken to reduce the cost of handling cotton for the planter.

Messrs. W. D. Cleveland & Co., of Houston, Texas, have taken the initiatory step and are building a warehouse and compress combined upon which they get a rate of 1½ per cent. insurance, and will have their plant so situated that their cotton will come to them direct in cars, and thus save the price of drayage to and from the press, which is fifteen cents each way, making a reduction of thirty cents per bale of cotton, and a saving of the difference between 3 per cent. and 1½, which is 1½ per cent. or eight and a-half cents per bale of cotton.

By the compress and warehouse combined the buyer also saves money, for he has no such thing as interest to pay.

Banking facilities would be greatly improved, for as soon as the cotton is received from the seller and marked up the buyer takes a receipt along with him from the compress clerk and goes immediately and gets his bill of lading and can place his exchange in an half hour's time, thus accomplishing the same day what now takes never less than two days and more often three days.

The manifold advantages of a compress and warehouse combined will present themselves to all practical cotton men, and the success of W. D. Cleveland & Co.'s plant is assured. WILL W. BIERCE.

Developments in Rome, Ga.

ROME, GA., January 24.

Editor *Manufacturers' Record*:

The outlook for Rome during the present year is very flattering. Considering the financial depression that was pretty general all over the country last year, there was an unusual amount of improvements made here. Indications now are that the improvements to be made during the present year will be without a precedent in the history of the city. Already contracts have been made for several large three and four-story brick business blocks, besides hundreds of dwelling-houses. Numerous manufacturing industries are in contemplation, and no doubt will be built.

There is a probability that a bureau of immigration will be started which will thoroughly advertise the city and offer special inducements to immigrants to come here and locate.

Mr. J. L. Camp, a prominent capitalist of this city, has interested foreign capitalists and will build the 10,000-spindle cotton factory to cost about \$500,000.

Mr. J. W. Rounsaville, also a prominent capitalist, has interested Northern capitalists and will erect a 5000-spindle cotton factory and run the plant by water.

Messrs. R. W. Van Dyke, S. M. Inman and others will also erect a 5000-spindle cotton factory. They will use the large exposition building.

The Southern Aluminum Co. has recently completed its large plant and will shortly commence the manufacture of aluminum

alloy on a large scale. The bauxite ore is found in this section in large quantities and can be mined and delivered at the plant at a very low cost.

The Rome Cotton Mills, which has been in successful operation ever since its completion about ten years ago, has been enlarged several times. The managers are arranging to make another addition which will nearly double its present capacity.

Several companies are being organized to build three or four canning factories before the season fairly opens. The principal projector of these enterprises is Mr. H. B. Parks, a leading dry goods merchant of this city.

There are several projects on foot to build small diversified industries. The business men and capitalists of the city are just beginning to realize the value of diversified industries, and will direct their attention to that feature in the future.

The electric street-car line which was commenced several months ago is nearing completion. Work on the tracks is being pushed forward vigorously, and will shortly be ready for the cars. The large powerhouse and car-shed have been completed, and a large force of hands is now engaged in setting the boilers and engines. The company will also have the contract for lighting the city.

The city is now building a new water works. The plant will be located about a mile above the city on the Oostanaula river. The river water will be used, and will be filtered before it is pumped into the reservoir. A basin reservoir is being built on top of the highest hill near the city, and will hold 5,000,000 gallons of water.

W. OTIS CLEMENT.

GENERAL NOTES.

Brief Mention of Various Matters of Current Interest.

THE Texas legislature is considering a bill authorizing the purchasing and equipping of agricultural lands at a cost of \$300,000 upon which to work State convicts. It is contemplated to employ about 800 prisoners.

HUGH INMAN has become interested in Manchester, a promising and beautiful suburb of Atlanta, and has been elected as president of the development company. The future growth of the place is now expected to be more active.

REPRESENTATIVE JOINER, with a view to the good of the people who sell limestone, ore and other material to foundries and furnacemen engaged in the production of pig iron, has introduced a bill in the Alabama legislature providing for the appointment of licensed weighers of limestone, ore and other material furnished to furnaces and foundries manufacturing pig iron or like product.

A GRADUATED land tax based on the Henry George idea of taxation is provided for in a bill introduced in the Texas legislature. It requires the payment of a poll tax from land-owners varying according to the extent of land owned; for instance, the tax on over 200 acres and less than 400 is \$1.00; between 400 and 500 \$2.00, and so on until 1200 acres is reached, and for each additional thousand thereafter a tax of \$20 is imposed.

ON February 1st the New Orleans Electric Street Railway commenced operations. A few days before a trial was made and everything found to work satisfactorily. As this was the first time cars propelled by anything but mule-power had been seen in the streets of New Orleans, they attracted much attention, and many amusing incidents occurred. There are in all fifty cars, each supplied with a twenty-five horsepower motor. Those to run on Carrollton avenue are painted green; on Napoleon

avenue yellow, and on Jackson avenue red. The cars are provided with cane seats, sliding blinds and the usual conveniences.

THE government snagboat Satilla, which has been engaged for some time past in clearing the channel of the Ocmulgee river, has reached Macon, Ga., and that city now has clear water communication with Brunswick. Arrangements are being made to organize a steamboat line to run between the two points, a distance of 350 miles. This line will render more accessible the valuable timber region between Macon and Hawkinsville and will aid in developing the agricultural country along the river. For Macon the benefits to be derived are very considerable. It will have cheaper transportation for its products and a greater area for which it will be the market centre.

It is said that the demand for cotton hulls at the oil mill in Greenville, S. C., has become so great as to exceed the supply, and the mill is obliged to buy hulls from other mills to fill its orders. Four years ago the value of hulls as food for stock and manure was practically unknown. At present about ninety tons of cottonseed are consumed daily, and from thirty-five to fifty carloads of cottonseed meal a week are shipped from Greenville.

ON Thursday the 26th ult. a large party from points in Ohio arrived in Pensacola, Fla., to attend the sale of lots to be held by the East Pensacola City Co. on the following day. The visitors, about 135 in all, were pleasantly entertained by the company, and all attended the sale on the 27th. About 120 lots were sold at prices ranging from \$20 to \$103. On the following day the last sale was held and 103 lots sold at from \$8 upward.

A BILL introduced in the Tennessee legislature requires each insurance company doing business in that State to deposit with some trust company, to be held in trust for the use and benefit of all policy holders, an amount of United States bonds or bonds of the State of Tennessee of face value equal to 25 per cent. of the year's premium receipts of said company in that State.

JUDGE BRANCH T. MASTERSON, of Galveston, Texas, who is greatly interested in the movement toward making the Brazos river navigable from Waco to the Gulf, has prepared a report upon the subject, which he will deliver to a convention to assemble in Waco on February 1st to discuss the question. In this report Judge Masterson, after demonstrating the practicability of opening the channel and providing the necessary dams, proposes building from the river at various intervals little narrow-gauge railroads which will tap the surrounding country and bring its products to the river for shipment to the Gulf. This he shows will be far less expensive than constructing one broad-gauge railroad for the entire distance, and will be invaluable in developing the country adjoining the river by giving it and the cities touched cheap water transportation to market.

WASHINGTON, LA., has joined the many smaller Southern towns in the process of advance and development, and is pushing her claims before the world as a manufacturing town. Within her limits there are at present a cotton mill, sash and blind factory, cotton gin, oil mill, saw mill, brick and drain-tile works, and a large soap works is in contemplation. The manufacturing section of Washington is along the bayou Courtableau and the Southern Pacific Railway tracks, and adjacent to this Mr. H. L. Bidstrup has located an addition to the town and has made plans to build a number of houses for the factory people. Washington is on the eve of increased industrial activity, and several new industries are expected to locate there.

What Natural Gas Might Do for the South.

It has been frequently predicted with great confidence by some of the leaders in Southern development that in addition to the wonderful combination of advantages in the South for manufacturing that are now known of, it will in time be found that there are in parts of the South large areas of natural gas.

Such a discovery is not at all improbable. The history of the search for gas in different parts of the country furnishes many instances of unexpected "finds." The theories of geologists as to its presence are sometimes accurately borne out and sometimes shown to have been wholly incorrect.

Some years ago, for instance, when certain supposed enthusiasts in Indiana went to boring for gas, inspired by the great development that had followed its discovery in Ohio, there were learned scientists who conclusively proved, theoretically, that natural gas did not exist in Indiana, the geological conditions making it impossible.

Nevertheless the explorations went on, and discoveries made then and subsequently have established the fact that Indiana has by far the largest and most prolific gas field known in the world.

The discovery of gas in the South in large areas of territory, and with abundant flow, would have such an effect upon general development as can hardly be imagined. We all recall the intense excitement aroused in the early part of the last decade by the discovery of gas in Pennsylvania and Ohio, and its utilization as fuel in manufacturing, the tremendous impetus given to industrial development and the rapid and enormous expansion in real estate values. Industries of every sort moved into the gas districts, drawn there by the inducement of cheap fuel. Towns grew up almost in a night; ancient villages expanded rapidly into modern cities; railroads were built through the gas territory, and an era of general progress and prosperity set in. One of the notable accompaniments of this development was the speculation in real estate, in which fortunes were quickly made. It might have been supposed that with the exhaustion of the gas supply, the country would relapse into its former state, but such has not been the case. Railroads traversing the former gas districts are kept busy hauling passengers and freight. Banks are paying dividends and laying up surplus accumulations. Merchants are prosperous. Hotels are making money. And, in general, communities that were built up through the agency of natural gas are so firmly established that they continue now to live and prosper without the gas. Where gas has given out, or the supply is so diminished that it can be had only for domestic uses, manufacturers have gone back to coal or have resorted to the use of oil as a fuel. An exhausted gas field often becomes a productive oil field, the flow of oil beginning as the flow of gas ceases. Of course, in localities where the gas supply has become depleted there will not be a continuance of the former rate of growth, and while the towns that have been built up may hold their own, they will probably not do much more than this.

The short-sighted methods that prevailed in the early days of natural gas are responsible for this untimely depletion of the supply. It is probably not at all an exaggeration to say that since the beginning of the gas era in Pennsylvania and Ohio more gas has been wasted than has been used, and that what has been used has been used with so little regard for economy that twice as much has been burned as was needed to accomplish the results reached. So that if it had been taken care of and judiciously used from the beginning as it is now in the newer gas regions, it would have lasted, with the same average rate of

consumption, four times as long as it has. It is not to be supposed, however, that natural gas has entirely given out in Ohio and Pennsylvania. There are yet hundreds of productive wells furnishing many hundred millions of cubic feet a day. In many cities and towns it is used almost exclusively for cooking and heating, and is still used largely also for manufacturing.

As I said a little while ago, the largest gas field yet discovered is that in Indiana. It is also the most recently discovered, and here may be seen later illustrations of what natural gas might be expected to do for any section of the South in which it may be found. The same wonderful development that marked the early days of natural gas in the older districts is going on here, but on a broader scale and with greater assurance of permanency.

In Ohio and Pennsylvania the several gas fields are small in extent, aggregating probably not more than 1500 square miles. The Indiana gas belt covers about 6000 square miles. Within this there is an area of heavy pressure gas occupying about 1600 square miles.

Fortunately for this State its resources in gas remained unrevealed until the experience of the earlier fields had shown the necessity for carefully protecting it from waste, and had suggested methods and appliances by which, in its use, the fullest possible results might be obtained with the least possible expenditure of gas.

Natural gas was first used in Indiana about six years ago. Its discovery caused some excitement, and during the succeeding year or two very extensive investigations were made to ascertain the extent of the gas territory. Until these explorations had gone far enough to allay the fear that the field might be small and the supply limited, no large manufacturing development based on natural gas was possible. The comparatively brief life of some of the Ohio and Pennsylvania fields deterred manufacturers from investing money in plants until it could be determined that the supply in this new field would have a much longer term of life than in the others. As investigation went on and some idea of the large area of the field and the great thickness of the gas rock was had, manufacturers began to have confidence in the supply, and here and there a small factory was started using gas as a fuel. The movement gradually spread, and as year after year went by and the wells that had been bored continued to pour out an undiminished supply, the confidence in the field became complete, and now manufacturers from all parts of the country are crowding into the field to avail themselves of the enormous saving effected by the use of gas in the place of coal. The amount of money that has been invested in manufacturing in the Indiana gas field in the last three years, and particularly in the last six months, would seem incredible to people who have not had occasion to keep informed on the subject. And yet only a small part of the field has been developed. The central and most productive part of it has hardly been touched. Around the edge of the area of heavy pressure there are places like Anderson, Muncie, Marion, Kokomo, Hartford and others that have grown in three or four years from villages or farms to cities with 15,000 to 20,000 population. A tour through the gas field, including a visit to these towns, would furnish an interesting study to those who hope to find natural gas in the South.

Probably the most conspicuous example of the power of natural gas as a developer and town builder is seen in the youngest of the gas towns, which, though less than a year old, promises to outstrip all the others and to become, as to the Indiana gas field, what Birmingham is in relation to the Alabama iron district. I was so impressed by what I saw of the place when I stopped there recently on a visit to the

gas field, that I stayed long enough to find out something about it. Its history is interesting.

A year or more ago the owners of the great De Pauw plate-glass works at New Albany, Ind., just across the river from Louisville, Ky., probably the largest and most prosperous works of the sort in America, decided to move their works into the gas district. Having determined upon this step they employed competent experts, and at great expense explored the whole gas field. They found as a result of this investigation that near the centre of the area of greatest pressure there was a smaller area of 100 or more square miles in which the conditions indicated even a greater and more lasting supply of gas than existed elsewhere in the field. Within this area of about ten miles square, two of the great railroad systems of the West crossed. At this junction there was an old town of five or six hundred people. One or two small factories were already in operation there.

A point near this old town was selected as the site of the glass works, and the work of putting up the buildings began.

Naturally the proposed removal of a plant of this magnitude from one locality to another excited great interest, and among those who first learned of it was Mr. P. N. Clarke, a broker and financial operator, of Louisville, who was astute enough to see at once the effect it would have upon the growth of the town adjacent to the works, and who was thrifty enough to proceed immediately to utilize the opportunity thus presented. With the aid of Mr. George M. Arthur, of Middlesborough, he secured control of the most desirable land immediately around the old town and reaching out to and beyond the site of the De Pauw works. Then associating with himself another well-known Louisville business man, Mr. Charles Meriwether, the two organized a company to buy the land and develop it. The stock of the company was taken by the richest and most conservative people of Louisville and Lexington, the presidents and cashiers of the oldest and wealthiest banks and trust companies and the leading merchants, lawyers and capitalists.

Having bought the land the company, as the first step towards its development, set to work to induce Mr. A. A. Arthur, the projector and builder of Middlesborough, to take charge of the enterprise. Mr. Arthur, after a careful study of the situation, accepted the proposition made him. This was a fortunate beginning, for whatever the natural growth of the place would have been, this will be tremendously accelerated and augmented by the wonderful energy and ability, the fertility in resource, the amazing capacity for work and the genius for development that Mr. Arthur brings to the undertaking.

These various matters covered a period of several months, and it was only recently that the company began the work for which it was formed. Meanwhile the De Pauws had determined upon the building of a window-glass factory in the same locality, and they subsequently decided to build a glass-jar factory and a bottle factory. During this period other smaller factories of different sorts were built by manufacturers attracted to the place by the cheap fuel.

It is now about a year since the building of the De Pauw plate-glass works began, and a year and a-half or more since the first small industry was started. The present status of the town is this: One-fourth of the plate-glass plant has been built and has gone into operation with 400 to 500 hands. The plant when completed will employ 1600 to 1800. Half of the De Pauw window-glass plant is about finished and will start up in February with over 400 hands. The complete plant will require about 900 hands. Work has commenced on the jar works, and as soon

as the weather will allow the erection of the bottle factory will begin. These two industries will employ 400 hands. Twelve or fourteen other industries are in operation, employing about 1200 hands. They include a lamp-chimney works, which has been running with 375 hands, and is preparing to double its capacity and its force; a wagon works, a window-glass works, four or five woodworking concerns, stone quarries, a brick and tile works, two brick-making plants, one with a capacity of 60,000 bricks a day, etc.

Besides what I have enumerated, as soon as any building can be done work will begin on the buildings for several other factories for which contracts have been made. The United Window-Glass Co. has signed contract to build a glass factory that will employ from 1000 to 1200 hands. A rolling mill to employ 400 to 500 hands and a canning factory to employ 200 have been contracted for. Another brick company will begin operations in March with a capacity of 40,000 bricks a day. Contracts have been closed for a factory to make earthenware jars, employing 100 hands; for a bottle works, to turn out fifty tons of bottles a day, paying \$8000 a week in wages, and for a box factory and a planing mill, employing each about thirty men.

A year ago the population of Alexandria (which, by the way, I have omitted to say, is the name of the town) was less than 800; the present population, ascertained by actual count, exceeds 4600. There are two banks, one a national bank with \$100,000 capital. A street railway franchise has been secured and an electric road will be built in the spring. Arrangements have been made for building a handsome brick hotel. There are now three or four smaller hotels. The Alexandria Company (the company of which Mr. Arthur is manager) will make extensive street and other improvements and build a large number of houses. An opera-house is nearly finished and a large Masonic building is going up. The municipal authorities have granted an electric-light franchise, and applications have been made for water works and telephone franchises.

How does that strike the readers of the MANUFACTURERS' RECORD as a growth of a few months brought about by natural gas? And it is all substantial growth, too. There is nothing ephemeral about it. The factories that are building and others under contract are not such as need bonuses or other aid. They are strong financially and in every other way, and move to Alexandria only because of what they can save in annual outlay for fuel. The factory buildings that are going up are of the most substantial and expensive sort, and everything about the place suggests solidity and permanency. Desirable factories in good financial condition can get a site free, and the free right to use gas perpetually. Thus the entire outlay for fuel, where coal has been used, is saved, as well as the labor required to look after boilers and fires.

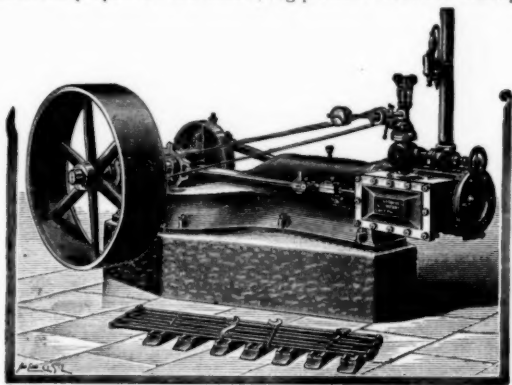
Incidentally, I was interested to find at Alexandria several former Middlesborough citizens, and among them Mr. Geo. Arthur (a brother of A. A. Arthur), who is president of the Alexandria Investment Co., and is an important factor in the town's development.

But what I started out to write about is the enormous value of natural gas to any section of country in which it is found, and if we are ever so fortunate as to discover that gas exists in the South in large quantities we shall see such a condition of prosperity as we have not yet dreamed of, with all our wonderful resources. W. H. E.

A BILL has been introduced in the Arkansas legislature to establish a bureau of mines, manufactures and agriculture. It provides that the bureau shall be under the supervision of three commissioners appointed by the governor.

MECHANICAL.**Improved Self-Contained Side-Crank Engine.**

This new engine, which has been brought out by Brownell & Co., of Dayton, Ohio, possesses many valuable features and improvements not usually found in slide-valve engines. The main bed frame is very heavy and strong, and the metal so distributed that the parts subjected to the greatest strain have sufficient metal at every point to resist it. In the design and construction of the main frame this essential requisite has been kept in view, not only put in sufficient metal, but so distributed it that strength, symmetrical proportion and hand-



IMPROVED SELF-CONTAINED SIDE-CRANK ENGINE.

some appearance are attained and insure equal distribution of strain and perfect bearing on foundation. The main bearings are very long, and being cast to and forming a part of the bed-plate, must be in accurate alignment, making a perfect self-contained engine.

The guides, which are also a part of the main frame, are circular in form and have wide bearings equal to one-third the diameter of the cylinder. The cross-head is of the well-known Corliss type, planed on upper and lower sides and wedge shape in form. The gibs are planed tapering to fit cross-head, and are so arranged that they may be easily and accurately adjusted to the line of wear and held securely in posi-

The Theill Combustion Governor.

One of the most prolific sources of waste in manufacturing or other operations requiring the use of steam is the unnecessary consumption of fuel through imperfect combustion. Various mechanical devices for feeding and for regulating the fire according to the steam pressure have been introduced, but the latter are, as a rule, slow in acting and far from satisfactory. After careful study of the conditions necessary to insure more perfect combustion, Geo. L. Theill, of the Theill Combustion Governor & Manufacturing Co., of Baltimore, Md., perfected a device in which the draft is regulated by means of the constantly varying pressure between atmospheric air and

thorough combustion; and as the condition of the fire regulates the atmospheric pressure on the diaphragm, the fire regulates its own draft by the position of the chimney damper. On the other hand, as the fire burns thin the vacuum in the combustion chamber becomes less, decreasing in consequence the pressure on the diaphragm, giving to it an upward movement and partly closing the damper, thereby pre-

steam already made. The same is true when the furnace doors are opened, as the pressure, being equalized, the diaphragm will rise, closing the damper and merely allowing sufficient draft to keep the smoke and gas from flowing back into the fireman's face.

As the action of the governor is entirely automatic, it is apparent that even with a most careless fireman it will greatly im-



THE RIFE HYDRAULIC ENGINE.

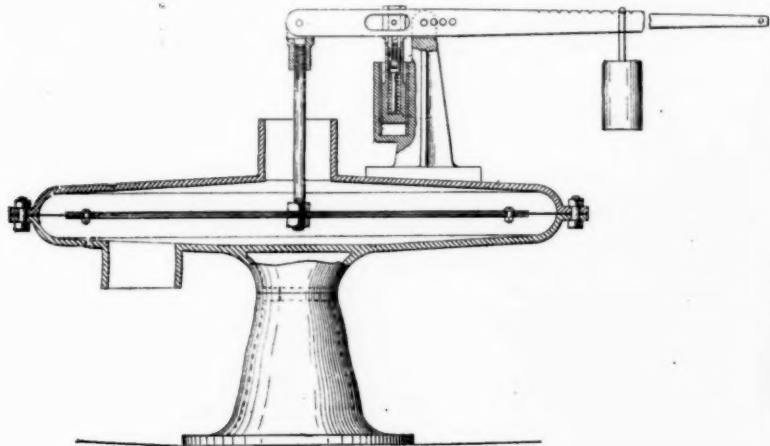
venting the admission of more air than would properly mix with the carbon and combustive gases for proper combustion.

If any part of the grate, however small, becomes bare, the vacuum in the combustion chamber is at once destroyed, pressure on the surfaces of the diaphragm is equalized, and the lever, counterbalanced with weight sufficient to lift the diaphragm and operate the damper, feels the influence of

prove the results obtained from a boiler, and with ordinary intelligence displayed in firing it will make a most marked increase in steam and decrease in the amount, and consequently of the cost, of the coal used to produce it.

The Rife Hydraulic Engine.

The accompanying illustrations show the Rife hydraulic ram or engine, manufac-



THE THEILL COMBUSTION GOVERNOR.

tion by jam nuts. This arrangement is a most desirable feature, giving quick, simple and positive adjustment. The gibs are babitted with genuine metal, and when necessary can be readily rebabitted. The cross-head box is phosphor-bronze metal, and is adjusted to line of wear by wedge, which is held firmly in position by set nuts. The crank-wrist connection is locomotive style, heavy strap and bolts, and wrist-pin is very large, giving ample bearing and strength. The crank-box is phosphor-bronze metal, and is taken up with wedge and set nuts. A governor, automatic stop, governor belt, automatic drain cocks, automatic sight-feed lubricator, oil cups, centrifugal oiler, wrenches and foundation bolts are furnished with each engine.

opens the damper in the draft stack. This movement is also regulated by the sliding weight shown on the lever and by moving its fulcrum forward or backward. Attached to the lever immediately behind its support there is also a steam damper regulator, which, in case of extremely high or low steam pressure, will close or open the damper. When the fire is thick, the grate free from bare spots and the furnace doors closed the atmospheric pressure on the diaphragm caused by the partial vacuum in the combustion chamber would cause the diaphragm to move down, inducing a movement of the lever which throws the damper wide open and allows plenty of air. A fire, under the conditions above named, requires an abundance of air to produce



THE RIFE HYDRAULIC ENGINE.

this condition of the fire and acts on the diaphragm by raising it, thereby nearly closing the damper and keeping it in that position until the fire has had proper attention. This action, which is purely automatic, prevents the passage of cold air over the heating surfaces of the boiler, with all such consequent injurious effects as damage to boiler, waste of heat, loss of combustive gases and condensation of

tured by the Rife Hydraulic Engine Co., of Roanoke, Va. The smaller cut of the double-acting ram shows the various parts, and the larger one shows the No. 80 machine in operation.

The terms "double-acting" and "single-acting" do not indicate a difference in power, but are used to designate the functions of the machine, the single-acting elevating a portion of the same water that

is used to operate it, the double-acting elevating spring water, while deriving its power from water obtained from some other source, such as an adjacent branch. Many springs are too small to afford the

acting pattern, showing the necessity for just this apparatus.

The operation of hydraulic rams is not generally understood, but by a simple explanation may be readily comprehended.

spends its force, when the outside working valve drops, opening the passage, through which the water again commences to flow until the velocity in the column is acquired, which closes it as before. The entrance of the water into the chamber compresses the air, and, being elastic, this air cushion in expanding forces the water in the chamber on through the discharge pipe to the point of delivery, its force also closing the inside valve with suddenness against the column of water in the drive pipe, forcing it back toward the head or pond and tending to produce a vacuum in the water chamber, i. e., that portion of the machine between the outside valve and the air chamber, creating a suction, and

fies the blow, relieving the strain, and thus admitting of the construction of machines of larger size to any limit that may be desired to build them.

The operation of the double-acting ram is based on the principle of the reaction of the water in the drive pipe caused in part by the forcible closing of the inside or delivery valve against it, as explained above, the water from the spring being conducted by means of the spring supply pipe into the water chamber B at a point directly beneath the air chamber, and following the water in the drive pipe in its reaction towards the head. This spring water at the next stroke or blow is forced into the air chamber, the check valve O preventing its return towards the spring. The overflow pipe N is provided for the relief of the flowing column of water through the spring supply pipe M on closing the check valve. This double-acting device works admirably, and insures the delivery of pure water at the discharge point, no matter what the character of the water used to drive the ram may be.

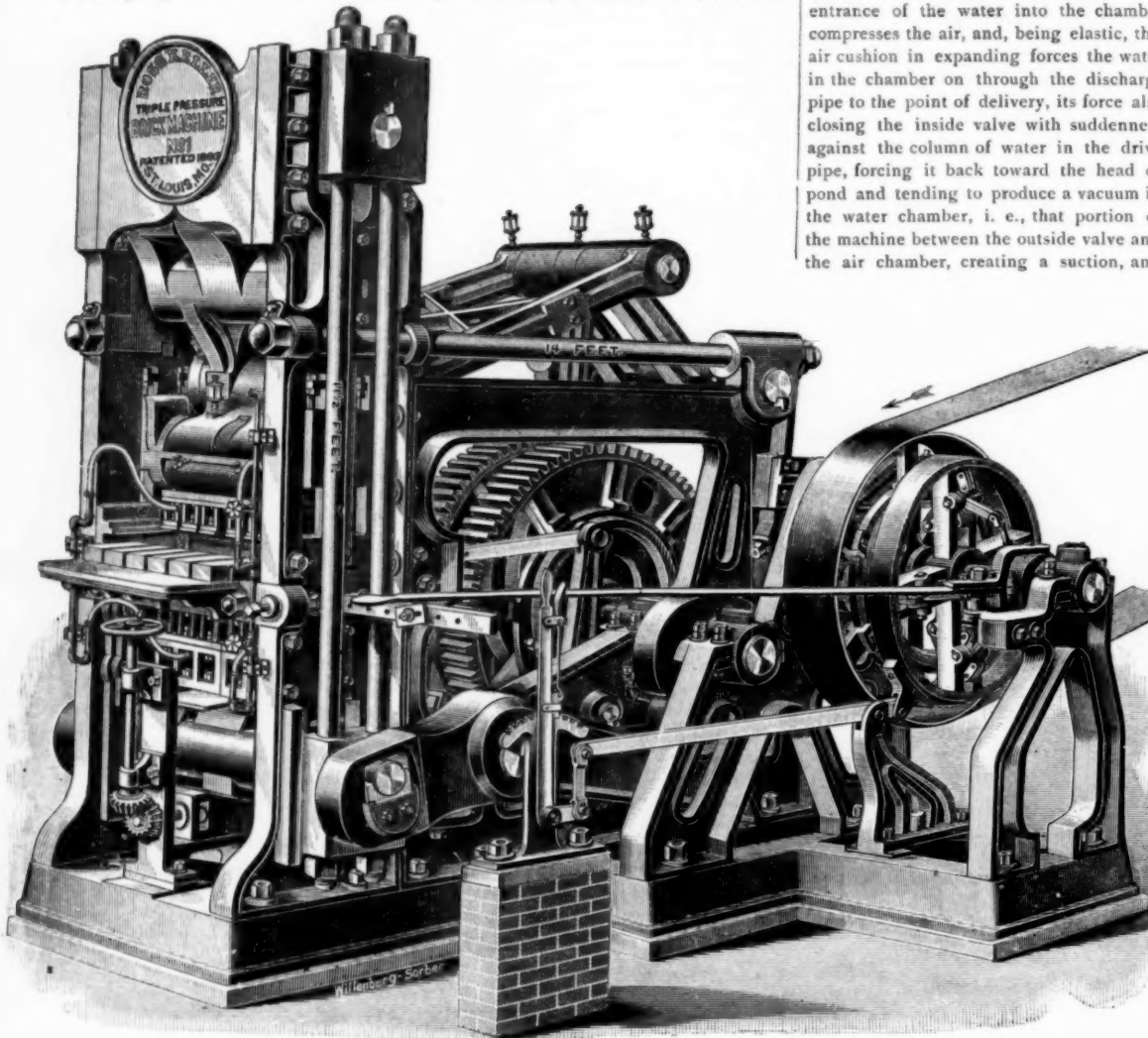
These rams are provided with an adjustable weight sliding on horizontal bars, which may be partially seen through the waste or working valve in the larger cut, by which the amount of water desired to be used can be regulated and adjusted so as to decrease the using capacity from full to one-half or even less—a very valuable feature, enabling the operator to adjust it to varying conditions of the water supply.

The great demand developed of late for a ram of sufficient capacity to elevate water in quantities adequate for irrigation and town supply has induced the manufacturers to make a ram larger than ever before constructed, and their No. 80 is built with a capacity for elevating large quantities of water. This style ram has been recently completed, and the test shows all that was expected of it. The cut shows it in operation under a fall of seven feet, elevating to the height of thirty-four feet one gallon per second, which is about 20 per cent. of the water used to run it. It is fitted with an 8-inch drive pipe and 4-inch discharge pipe.

A number of these larger sizes will be furnished for supplying water to placer mines in South America, and some will be used for irrigating purposes in the West.

The Ross-Kellar Brick Machine.

After many years' experience in the manufacture of pressed brick and of machinery for that purpose, the inventors of this machine discovered that any clay would make much better brick if subjected to more than one pressure, and that two or more press-

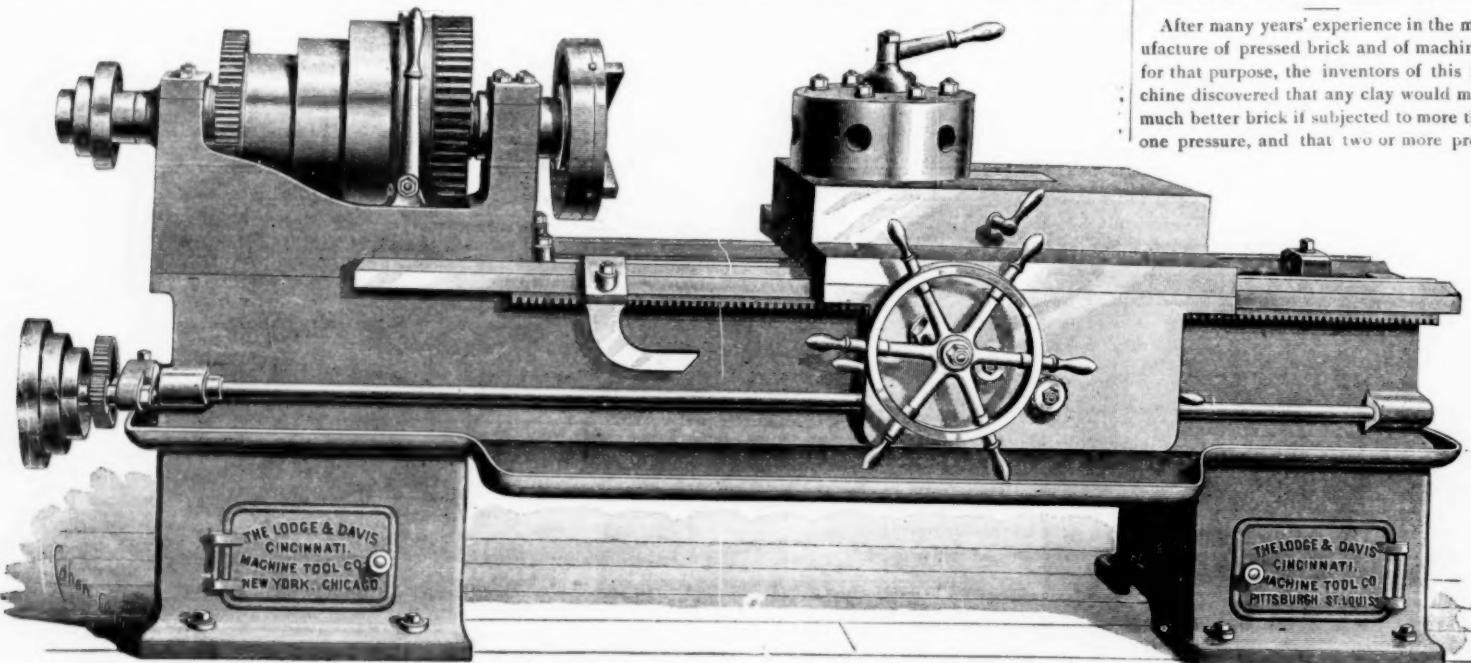


THE ROSS-KELLAR BRICK MACHINE.

necessary power to operate the ram, and many of ample volume are so situated that sufficient fall is not afforded. Many times an adjacent stream with the necessary

The water from the head or pond passing down the drive pipe rushes out through the working valve chamber, passing around the valve until sufficient velocity is attained to

drawing in through the hole seen in the casting just below the air chamber a small quantity of air, which at the next stroke or blow is forced with the water into the air



HEAVY TURRET LATHE.

volume and fall could be utilized, but the water is undesirable for use. In such cases the double-acting ram solves the vexed problem. It is stated that fully one-fourth of the rams sold are of the double-

close it, when the volume of water expands its force against the inside valve over the entrance to the air chamber, opens it and a small quantity of water enters.

Almost instantly this column of water

chamber, replenishing the air that is absorbed by the water under pressure and constantly carried off. It is important that this air cushion should be present to the fullest degree, as it receives and modi-

ures were absolutely necessary to successfully work shale and other similar materials. So after much experimenting in this line, this press was built to demonstrate this idea.

It has three separate and distinct pressures, the first being a concussion pressure, then a stop, when the two final pressures are applied. If, after the first pressure, there is any tendency in the brick to swell or pluck, which would be caused by the compressed air in them or the clay being too damp, the final pressures bond and solidify them perfectly, and thus thousands of good brick are saved which otherwise would have to be thrown away. Brick made by this process are much more solid, and when burnt have a better metallic ring. Every intelligent operator of a pressed-brick machine will appreciate the great advantage of this triple-pressure movement.

This new press is fourteen feet two inches long and eleven feet six inches high, weighing 68,000 pounds. It is constructed upon the compound toggle principle, having but two wheels. All of its shafts are six inches in diameter, and the connecting pins five, both being made of the best forged steel. All bearings are bushed with bronze, those in the toggle connections being twenty-four to twenty-eight inches in width; with this great bearing surface, the bushing will wear for years. The strain while pressing the brick comes altogether on the four heavy steel side rods, which are four inches in diameter, and will resist a tensile strain of 3,000,000 pounds without stretching; hence, as the pressure on six brick rarely exceeds 600,000 pounds, it will be seen that it has a great surplus of strength at this point, and so it is with every other part of the machine. It is built strong in all its parts, and in the very best workmanlike manner, has no compound or fast-running wheels or pinions, and will run for years with but nominal cost for repairs. All the movements being positive, the machine is perfectly noiseless when in operation. About ten horse-power will suffice to run it to its full capacity.

This press makes six brick each revolution, and if run at the usual speed will make 35,000 to 40,000 bricks per day. But it is designed more for superiority of product than large output, and to this end it is considered best to run the machine at eight and one-half revolutions per minute, which will yield 30,000 perfect brick in ten hours, allowing reasonable time for incidental stops. It makes the very finest grade of front and ornamental brick, and can be changed from one to the other in thirty minutes, or both kinds can be made at the same time. It removes every semblance of granulation from the face of the brick.

These machines are made by the Ross-Kellar Brick Machine Co., 207 Laclede Building, St. Louis, Mo.

Heavy Turret Lathe.

The accompanying engraving is of a new turret lathe which has recently been brought out by the Lodge & Davis Machine Tool Co., Cincinnati, Ohio. It is designed especially for the heaviest work adapted to be done by this method, such as is done on large valves, etc. The head is provided with a friction clutch which allows the back gears to be thrown in or out of action without stopping the machine. The feed is either by hand by the pilot-wheel shown or by power through the feed rod, this feed being engaged or reversed at the carriage. The turret, which is sixteen inches diameter, revolves automatically. There is an automatic stop for the feed, which stops at any desired point. Cabinet legs are arranged for the reception of tools and fixtures, and the usual features for controlling the flow of oil are provided.

ACCORDING to the comptroller's estimate it will require \$6,244,863 to run the Texas State government during 1894. \$3,541,500 of this amount is for maintaining public schools.

The Kerkhoff Upright Drill Press.

The large drill shown in the accompanying illustration is a new machine brought out by A. H. Kerkhoff & Co., Cincinnati, Ohio. These drills are heavily braced from top to base so as to insure perfect rigidity and prevent the column from springing under the strain of heavy drilling. The gearing is all heavy and fitted with cone pulleys of large diameter and wide belt surfaces. The back gears are engaged by a simple lever movement. The spindles are of extra large diameter, and, together with the front arm, are balanced by a weight in the column. The front arm

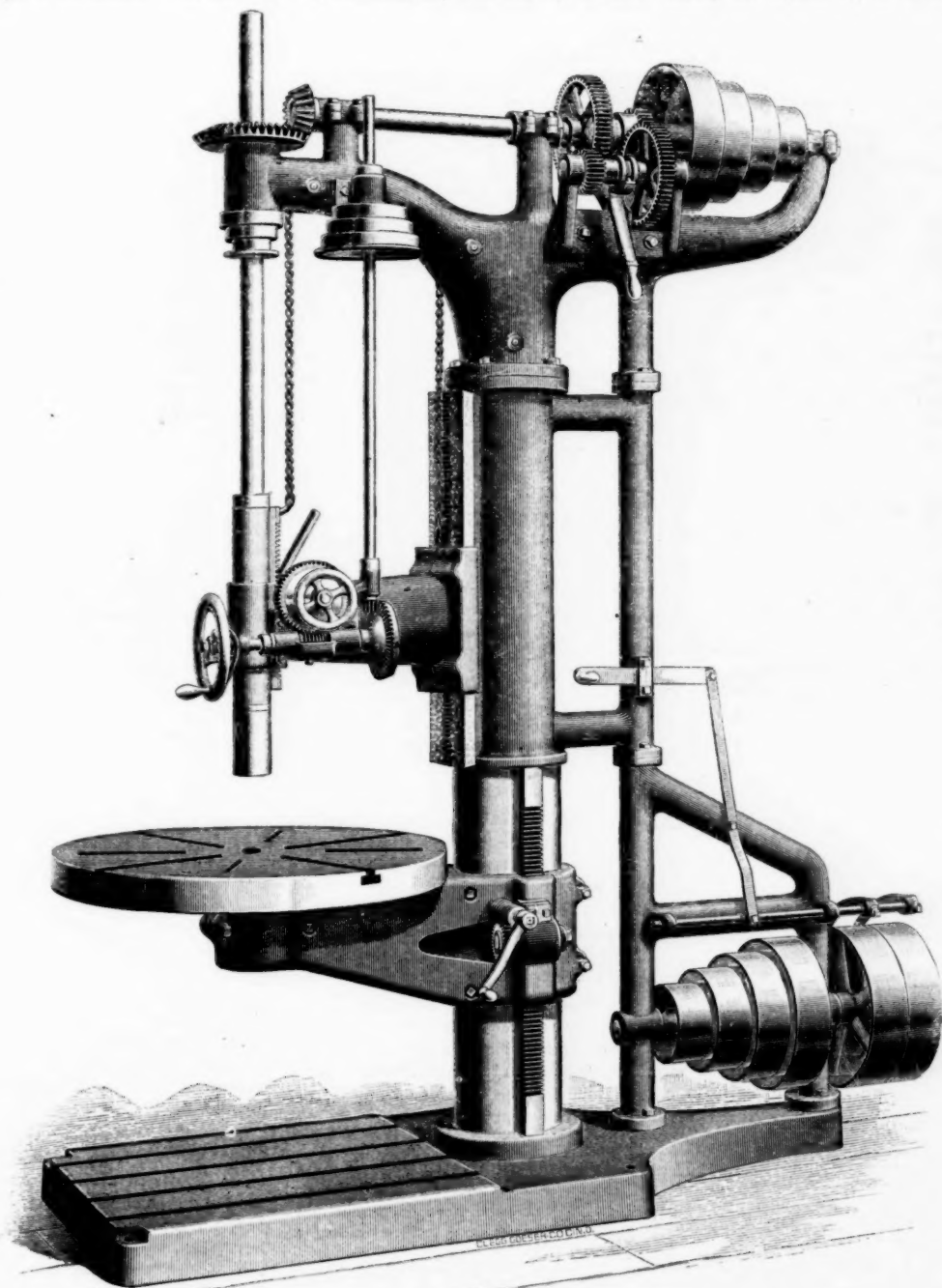
ing work. The arm swings around the column, and is raised and lowered by rack and pinion operated by screw gearing. The design of these drills is the result of many years' experience in building and operating this class of machine tool, and the makers believe they will recommend themselves to the mechanical public. Four sizes are made, with 25, 28, 32 and 40-inch swing, respectively.

The Providence Steam Capstans.

Capt. H. S. Taber, of the United States corps of engineers, having tested the Providence patent steam capstans made by the American Ship Windlass Co., of Provi-

"The readiness with which spare parts may be secured and kept on hand peculiarly adapts them to service upon the Southern and Western rivers, where the snagboats often have to work in isolated localities. It is very rarely that I have found a piece of machinery that I did not have occasion to find some fault with, but if asked to point out a defect in the working of these capstans it would be simply impossible to comply with the request.

"If firmly set and properly cared for their action is all that can be desired, and if any failure is had with them anywhere, it will be found due to the lack of proper care in setting the capstan up, or in keeping it



THE KERKHOFF UPRIGHT DRILL PRESS.

is gibbed to the face of the column, and arranged to be moved up and down by rack and pinion. The manner of fitting the arm to the column and the clamping device used for fastening will always keep the arm and spindle in perfect alignment. No matter how long the machine may have been in use or how much the parts may be worn, when the clamping screws are fastened the spindle will come to its original centre.

The drills have hand or automatic feed, with quick returns, and operate with ease and accuracy. The table is made to turn in the arm, and has four openings for bolts and four T slots for clamping and fasten-

dence, R. I., writes of same as follows:

"I have been using your steam capstans for snagging operations and other purposes for about six years. You ask me to express an opinion in regard to the merits of the capstans. I have to say that to enter fully into the satisfaction I have found in the use of these capstans would be something impossible for me to do in this very busy season. They are simply perfect in action and reliability, and if some little pains is given to select the capstan specified in your catalogue as capable of doing certain weights of work, they become beyond question the most reliable steam capstans of which I have any knowledge.

properly oiled and cared for. Your heavy capstans, which you furnished me on a special order, have been for the past month doing magnificent work. They are mounted upon a wooden-hulled snagboat that drew about thirteen inches of water when it was first built, and have been doing as satisfactory work on the Arkansas river as much heavier capstans of other patterns attached to steel-hulled snagboats of three feet draft.

"It affords me much pleasure to say these things in regard to your capstans, but in saying them I feel that I have not done justice to them. I shall be very glad to answer any questions in detail that you may choose to refer to me."

LUMBER.

[A complete record of new mills and building operations in the South will be found in the Construction Department, on pages 18 and 19.]

Southern Lumbermen's Association.

The Southern Lumber Manufacturers' Association meets in Mobile, Ala., on February 15. It is composed of yellow-pine lumbermen of Arkansas, Louisiana, Texas, Mississippi, Alabama and Florida, and has a membership of over 500. Some of the millmen of Mobile, notably Capt. J. W. Black, of the Sullivan Lumber Co., and A. S. Benn, of Hunter, Benn & Co., are making preparations to give the visitors a fitting reception. A hall has been engaged in which to hold their meetings and boats chartered for excursions on the river and bay, while a banquet will wind up their visit to the city.

Lumber Matters in Memphis.

MEMPHIS, TENN., January 30.

The backbone of winter seems to have been broken, and consequently there is a very perceptible improvement in the lumber business during this week. There is a better chance for work to go ahead and also for filling shipping orders. For the past three weeks there have been no river shipments, but now that the ice is gone orders are beginning to come for early shipment to Northern points.

The Cole Manufacturing Co. recently shipped two carloads of finished poplar doors to Washington, D. C. The Southern Pump & Lumber Co. is sending large lots of pumps to Boston, Mass., Bangor, Me., and has also filled an order from the Northwest for 750,000 feet quarter-sawn red and white oak. L. L. Werrell, of North Carolina, has purchased a large tract of timber land in Newton county, Miss., and expects to develop it during the spring.

J. N. Meyers, of St. Francis, Ark., has formed a corporation, of which he is president, which will operate the saw-mill plant formerly owned by him. Crawford Bros., of Paragould, Ark., have sold their spoke factory, and it will probably be removed to St. Francis. Beck & Ellis Bros., Cherry Valley, Ark., are putting in machinery to make red oak and gum headings for slack barrels.

J. W. Thompson, president of the Nettleton (Miss.) Hardwood Lumber Co., has made a contract in Chicago for the entire output of the company for the coming six months.

Southern Lumber Notes.

The White-Hall Co., of Dillwyn, Va., has let contract to H. S. Servoss for the erection of an improved dry-kiln to have six tracks and be 100 feet long.

JOSEPH BRILHARDT, of Piles, Harford county, Md., has secured a contract to supply 50,000 standard-gage cross-ties for the Baltimore & Lehigh Railroad.

THE C. W. Rich Co., of Mount Pleasant, Tenn., is about to enlarge its stave plant on account of a large order recently received from a Louisville (Ky.) cooperage company. It is to furnish 2,000,000 perfect crozed staves.

FRANK PRICE and William W. Welch, trading as Price & Welch, lumber dealers at Canton avenue and President street, Baltimore, made an assignment on January 26 for the benefit of creditors to James H. Cranwell, trustee, who gave bond in \$60,000. Mr. Cranwell is a creditor of the firm. It is stated the assets may reach as high as \$40,000 and the liabilities as high as \$75,000 or more. A full statement is being prepared for the creditors. Mr. James H. Cranwell, the assignee, said in reference to the assignment: "The assignment of Price, Welch & Co. is only a temporary one. What their assets are I am unable to say until an account is made up.

The respect and confidence which the firm has always enjoyed enables me to say that their difficulties will be only temporary. I gave bond with John M. Littig and J. V. Wagner as sureties."

THE organization of the Paris (Tenn.) Lumber Co. has been completed, and work will soon commence on the erection of buildings for the machinery. W. T. Wrathen is president; W. H. Williams, vice-president; E. B. Parker, superintendent, and Y. Q. Caldwell, secretary and treasurer.

MESSRS. DAVIS BROS. intend to erect planing mills and box factory at Rural Hall, N. C., and will at once commence work.

E. W. KENDALL, Thomas Kirke, John Derbyshire and E. S. Morris, all of Atlanta, Ga., are endeavoring to secure the furniture factory at Alabama City and put it in operation.

THE Woodworth Lumber Co. will at once rebuild its saw-mill plant destroyed by fire last week.

THE British schooner Edwin Janet cleared from Brunswick on January 25 for Nassau, New Providence, Bahamas, with 13,000 feet of lumber and other merchandise.

E. R. HART & Co., who have just started their new saw mill at Hollandale, Miss., have contracted their entire output to Chicago and Buffalo parties. The mill's capacity is 20,000 feet of hardwood daily.

THE Mackie Lumber Co., of Piedmont, W. Va., has purchased all of the manufactured lumber of the Manor Manufacturing & Mining Co., at Bradshaw. The latter company is composed of several officials of the Baltimore & Ohio Railroad.

MESSRS. BLACKISTON & SCHAIDT, of Cumberland, Md., have purchased about 7000 acres of the old Caton estate, about twenty-five miles from that city. The price paid was \$12,000. The land is thickly wooded and one of the most valuable properties in the country. The purchasers will shortly begin the erection of saw mills on their newly-acquired property.

A RUMOR current in Little Rock, Ark., to the effect that the Southern Stave & Lumber Co. had failed is without foundation. A telegram to the company announces that it will not be affected by the Lincoln Bank failure, of Lincoln, Neb., in which some stockholders of the Southern Stave & Lumber Co. were interested.

THE schooner Robert Ruff, thirteen days from Coatzacoalcos, Mexico, with a cargo of cedar and mahogany logs, arrived at New Orleans on January 25. The cargo was consigned to the Otis Manufacturing Co., and will be manufactured at the company's mills.

THE saw and planing mills of Blade Bros. and Jones & Co., of Elizabeth City and Norfolk, Va., which have been shut down for several days, resumed operations on Monday last.

THE large saw mill of G. W. Favor & Co. at Upatoi, Ga., was blown into atoms on January 24 by the explosion of the boiler of the engine.

THE Rochester Boom & Lumber Co., incorporated December 14, 1892, by John H. Beckley, Henry H. Craig, Eli M. Upton and Marcus Briggs, of Rochester, N. Y.; Amos Howlett and W. C. Warner, of Syracuse, N. Y., and J. T. McGraw, of West Virginia, with a capital stock of \$1,000,000, has purchased 42,000 acres of the woodland of Pocahontas county, W. Va., and a mill site at Marlesburg, fifty miles down the Greenbrier. Work will begin at once on one of the largest saw mills of the country, costing \$130,000.

THE Southern Pacific Railroad received on January 24, at Colmesneil, Texas, a shipment of one car of curly pine. The car contained 10,000 feet of choice pine,

and was donated by the Yellow Pine Frame & Lumber Co., of Colmesneil, to the Texas World's Fair building.

THE Carolina & Georgia Lumber Co. has received its charter. The capital stock is \$8000, one half of which has been paid up. The board of directors are: T. R. McGahan, James F. Redding, J. M. Seignious, William L. Salas and H. C. Gill. The officers of the company are: J. M. Seignious, president; William M. Salas, general manager, and H. C. Gill, secretary and treasurer.

THE Mexican schooner Bella Sava left Sabine Pass, Texas, on January 23, for Tuxpan, Mexico, with 172,000 feet of lumber, and the schooner Frederick Rosner cleared for Coatzacoalcos, Mexico, with 374,000 feet of railway ties. The latter vessel crossed the bar drawing twelve and a-half feet full.

THE Retail Lumber Dealers' Association of Indiana arrived at Little Rock on January 26 on a special train of Pullman sleepers, and were met by a committee of the Arkansas Lumbermen's Association and escorted to the Hotel Richelieu. This association is on an inspection tour of the lumber resources of the State of Arkansas, and numbers over 300 persons. The freedom of the city was extended to the distinguished visitors, and a banquet at the Hotel Richelieu closed the festivities in Little Rock.

THE Mobile Shingle Association, at a meeting on the 24th ult., elected Paul A. Savage, president; Cary W. Butt, vice-president, and John R. Simpson, secretary and treasurer, for the ensuing year. The association, formed a year ago, reports sales ahead of their last year's business, and the stock on hand is 40 per cent. less than that of last year at this date.

THE Mobile Lumber Co. has received all the machinery for their new mill on Three-Mile creek, which is approaching completion.

THE Beaumont Lumber Co. and the Nona Mills Co. held their annual meeting on January 23, and the Texas Tram & Lumber Co. also held their meeting the day following. The Nona Mills Co. shipped in 1892 17,823,760 feet of lumber, and the Beaumont Lumber Co.'s shipments for that year were 23,378,317 feet.

THE bark Lennator cleared from Brunswick, Ga., on January 27 for Lisbon with 432,046 feet of timber, valued at \$4372.

AN extensive tract of timber land on Ten-Mile creek, near Buckhannon, W. Va., has been purchased by Messrs. Fell & Stranahan, of Pennsylvania, who will at once erect mills and commence developments.

THE Spengler Lumber Co., of Vicksburg, Miss., has lately purchased 2,000,000 feet of poplar timber on Cold Water river, the logs of which will be floated to Vicksburg for sawing. This is said to be the largest amount of poplar ever manufactured so far South, and it will have to be floated 200 miles.

GREGORY & CHAMBERLIN, of Willette, Tenn., have arranged to start up their axe-handle factory at once.

LEE CORNWELL, whose lumber plant at Willette, Tenn., was burned recently, is about to rebuild.

MR. C. C. MENGLE, of Mengle & Bro., of Louisville, Ky., while at Nashville recently, contracted for 800,000 feet of sycamore lumber.

MESSRS. DENK & STEED have just located their mill in Fayette county, W. Va., near Mountain Cove, and will cut white-oak timber.

THE American Cooperage Co.'s plant at Friar's Point, Miss., is rapidly getting under way. The company intends to manufacture a patent stave barrel, of which Mr. Louis Reed, the vice-president, is the pat-

entee. The company is remodeling the old Friar's Point box factory and placing in considerable new machinery, and will also install a first-class electric-light plant.

J. W. BUSTER's cypress mill at Riverside, Ark., has started up, cutting 10,000 feet of lumber per day.

L. T. HOLLAND, of Willette, Tenn., will soon start to erect a new saw-mill plant. His last mill was burned.

MESSRS. HUNDLEY BROS. & Co. will add another saw mill to their plant, also machinery for making coiled hoops, staves, heading, spokes, handles, etc. Order for saw-mill outfit has been placed with the Lane Manufacturing Co., of Montpelier, Vt.

THE A. M. Stevens Lumber Co., of Dyersburg, Tenn., is working rapidly on the erection of its new mill. Upon the completion of the buildings a circular saw outfit to cut 50,000 feet daily will be put in.

THE L. N. Dantzer Lumber Co. is running its plant at Moss Point, Miss., day and night, owing to an overflow of orders.

MESSRS. W. D. WHEELWRIGHT & Co., of Brunswick, Ga., shipped over 32,000,000 feet of lumber during the past year, 10,000,000 of this going to foreign ports.

MESSRS. TAYLOR & RUSSELL, whose plant at Matagorda, Miss., was destroyed by fire recently, have now completed new buildings and are placing their outfit of machinery.

J. D. PITTS, of Glen Alpine, N. C., is about to put up a planing machine and sash and door factory. The lumber is now being placed on the ground for the buildings. Mr. Pitts has on hand 800,000 feet of lumber to begin operations with.

THE schooner Martha I. Thomas, 750 tons, was at New Orleans on the 19th loading with timber and building material for the Guatemala Northern Railroad, now in process of construction at Puerto Barrios in Guatemala. She will leave for Ship Island to complete her cargo, taking on 300,000 feet of Southern pine lumber.

MESSRS. PRICE, ELKINS, HEYWARD AND GIGNILLIAT, of Savannah, Ga., have filed a petition of incorporation in the Superior Court of Chatham county, Ga. They desire a charter under the corporate name of the Columbian Lumber Co. The capital stock will be \$10,000, with privilege of increasing it to \$100,000.

LUMBER MARKET REVIEWS.

New York.

OFFICE OF MANUFACTURERS' RECORD,
No. 126 Liberty Street,
NEW YORK, February 1.

This is a time of surprises. Well might we say with the singer, "nothing is like it used to be." Imagine bevel siding coming from the Pacific coast across the continent to Connecticut. Think of lumber coming from Washington State, 15,000 miles, to Philadelphia and New York. That is what is happening today. "Well," you say, "what has that got to do with Southern lumber?" We answer, "everything." Every kind of lumber that comes into this or any other market has more or less to do with every other kind that finds a market therein.

We think this coming year will go down to history as the cypress year, for this is the year when cypress will get a permanent footing. It is already a much-talked-of wood. The lumberman's curiosity is aroused; he is asking the question, "What is this much discussed wood?" "What are its merits or demerits?" And, since it has come to this, the orders are not far off. It is the cypress year, sure enough. We expect to see this market jump its demand up to 100,000,000 feet before another two years are past.

Yellow-pine dealers are asking the question, "What can we do to improve our condition? The spruce dealers are making money; the North Carolina pine men are

making money; why cannot we?" The answer is plain—it is because there is no harmony in the ranks. You let any big contract be given out in this town, and you will have bidders from Baltimore to Boston, and the New Yorker must bid against the whole lot; so, as a result, prices go down, and off, and off, and off, until, when the lowest bidder has got the job, somebody has got to suffer. What is the remedy? It will require a good deal of figuring to find out. At present, prices rule about as last quoted, which are as follows:

Building orders, 12 in. and under...\$19 50@ 20 00
14 in. and up... 20 00@ 21 00
Yard orders, random... 17 00@ 18 00
Ship stock, 40 ft. average... 22 00@ 23 00
Heart face siding, 1 and 1½ in... 18 00@ 19 00
1-inch wide boards... 22 00@
1½ and 1¾-inch wide boards... 23 00@
Kiln-dried sap... 15 00@ 16 00
Rift-sawn flooring, rough cargo lot... 35 00@ 36 00
" tongue and grooved, in carload lots... 40 00@

We can truly say "we told you so," and so we did. Oh! you dealers who are going about over the length and breadth of the land calling for poplar. We told you so. Poplar has jumped itself. Has it not? And good firsts and seconds are up—up. So is every other grade. And then, who has got any? Very few. One-inch firsts and seconds \$32.50 to \$33.50, saps \$26 and \$28, common \$24 and \$25—these are ruling prices today.

Quartered oak is not plenty, and sales are freely made at our quotations, which remain as heretofore, but there is very little call for any very large quantities at a time.

QUARTERED OAK.
1x6 inch and up...\$19 00@ 50 00
Thicker... 50 00@ 53 00
Common... 35 00@ 38 00

Plain oak remains about as last stated. Stocks which are dry and good find a sale, but culls are not wanted.

PLAIN OAK.
1x8 inch and up...\$35 00@ 36 00
1½ and 1¾ inch... 36 00@ 38 00
2 inch... 37 00@ 39 00
Export oak... 32 00@ 34 00

Good dry ash goes well, though the bad weather has had a tendency to chill the demand somewhat. We quote:

ASH.
1 inch...\$35 00@ 37 00
¼, ½ and 2 inch... 37 00@ 40 00
2½, 3 and 4 inch... 38 00@ 41 00
Common... 22 00@ 24 00
Balusters... 22 00@ 26 00

The outlook still remains encouraging. Remember this is a rising market, and govern yourselves accordingly.

Baltimore.

OFFICE MANUFACTURERS' RECORD,
BALTIMORE, February 2.

Indications of a change to milder weather conditions has stimulated the lumber market somewhat, and there has been a better movement in all the yards during the week. Commission men predict a fair season of activity upon the opening of navigation and the return of spring, while there is every prospect of heavy receipts during the current month. The demand has been very limited in character for some time past, and stocks of desirable grades of lumber are light. North Carolina pine remains firm, and there will soon be a free offering of all grades of this popular wood. Air-dried lumber is dull, with a poor assortment to select from, and prices unchanged. In white pine the list is very steady, with a better inquiry. Cypress is dull and prices a shade easier for certain grades. There is a regular but not urgent demand for hardwoods, and with stocks of desirable walnut, oak, ash and other woods prices are firm and stocks well held. The planing mills are getting busy, and will soon be rushing with orders. In nearly all departments of the lumber industry there is a better tone prevalent, and it is expected that with the buildings and other work in progress the coming season will be quite active.

The following list represents the prices current at this date:

VIRGINIA AND NORTH CAROLINA PINE.
5-4x10 and 12 No. 2, kiln dried... \$17 00@ 17 25
4-4x10 and 12 No. 1, " " " 19 75@ 20 25

4-4 narrow edge, No. 1, kiln dried... 17 25@ 17 75
4-4 wide edge, " " " 22 50@
4-4x8, 10 and 12, " " " 22 25@ 23 50
4-4 No. 1 edge flooring, air dried... 15 50@ 16 50
4-4 No. 2 edge flooring... 12 50@ 13 00
4-4 No. 1 12-inch stock... 17 00@ 17 50
4-4 No. 2 " " " 13 50@ 14 50
4-4 edge box or rough wide... 8 50@ 9 50
4-4 " " (ordin'y widths) 8 50@ 9 00
4-4 " " (narrow)... 10 50@ 11 00
4-4x12 " " " 7 00@ 7 50
¾ narrow edge... 7 00@ 7 50
¾ all widths... 7 50@ 8 00
¾ 10x16 wide... 8 00@ 9 00
Small joists, 2½—12, 14 and 16 long... 8 00@ 9 00
Large joists, 3—16 long and up... 9 50@ 10 50
Scantling, 2x3—16 and up... 9 50@ 11 00

1st and 2d clear, 4-4, 5-4, 6-4 and 8-4... 48 50@ 52 50
3d clear, 4-4, 5-4, 6-4 and 8-4... 43 00@ 44 00
Good edge culls... 15 00@ 16 00
Good stock... 17 50@ 18 00

CYPRESS.
4-4x6, 16 feet, clear... 23 00@ 24 00
4-4x6, 16 feet, fencing... 13 00@ 14 00
4-4 rough edge... 10 00@ 11 00
4-4 edge, Nos. 1 and 2... 18 50@ 20 50

HARDWOODS.
Walnut.
¾, Nos. 1 and 2... 75 00@ 100 00
4-4, Nos. 1 and 2... 90 00@ 100 00
5-4, 6-4 and 8-4... 95 00@ 110 00
Nos. 2½, 3 and 4... 125 00@
Newell stuff, clear of heart... 125 00@
Culls... 30 00@ 35 00

Oak.
Cabinet, white and red, plain sawed and good 1 and 2, 8 in. and up, 12 to 16 feet long, 4-4... 35 00@ 40 00
5-4 to 8-4... 35 00@ 40 00
Quartered white, 1 and 2 quality, all figured, 6 in. and up wide, 4-4... 50 00@ 53 00
Culls... 10 00@ 15 00

Poplar.
Nos. 1 and 2, ¾... 22 50@ 25 00
" " 4-4... 27 50@ 30 00
Nos. 5, 6 and 8-4... 30 00@ 32 50
In yellow pine cargoes, log run stock... 12 50@ 16 50
Culls... 12 50@ 14 50

SHINGLES.
Cypress, No. 1 hearts, sawed, 6x20... 7 25@ 7 50
No. 1 saps, sawed, 6x20... 5 75@ 6 00
No. 1 hearts, shaved, 6x20... 6 50@ 7 00
No. 1 saps, shaved, 6x20... 5 25@ 5 50

LATHS.
White pine... 2 70@ 2 75
Spruce... 2 35@ 2 40
Cypress... 2 15@ 2 20

Norfolk.

[From our own Correspondent.]

NORFOLK, VA., January 31.

The very severe weather which has prevailed for several weeks has caused a very quiet tone to the lumber market here, but from present appearances we shall have navigation open again shortly. The general opinion is that there will be a very active spring and summer trade. Throughout the milling section of Virginia and North Carolina business has been literally at a stand, and there has been no such thing as making shipment by water to any point. Stocks on hand at the various mills are not excessive, and as many of the mills have been shut down lately there will be a scarcity of certain grades of lumber. The receipts of air-dried lumber are light, and mills in the interior find it hard to get hands to work, so that there is a fair demand at good figures for all desirable stock. Planing mills are busy and have a number of orders to execute at fair figures. Cypress lumber of choice grades is in good demand and prices firm. The following table represents the prices of the North Carolina Pine Lumber Association.

Kiln-dried North Carolina pine lumber f. o. b. at this port is quoted as follows:

5-4 rift No. 1...\$27 50@
5-4 rift No. 2... 16 00@
5-4x10 No. 1... 20 00@
5-4x10 No. 2... 20 50@
5-4x10 No. 2... 15 00@
5-4x12 No. 2... 16 00@
5-4 edge No. 1... 17 50@
5-4 edge No. 2... 13 50@
4-4 rift No. 1... 25 00@
4-4 rift No. 2... 15 00@
4-4x10 No. 1... 18 50@
4-4x12 No. 1... 19 50@
4-4x10 No. 2... 15 00@
4-4x12 No. 2... 15 00@
4-4 edge No. 3... 9 50@
5-4 edge No. 3... 10 50@
4-4x8, 10 and 12 culls or box... 9 00@ 10 50
4-4x5-4 edge, cull or box... 8 50@

Charleston.

[From our own Correspondent.]

CHARLESTON, S. C., January 30.

The lumber market is showing considerable activity, and during the past week there has been a better trade demand from all sources. Prices continue very firm for all choice grades of lumber, and all reports from the interior represent the mills as fully engaged with orders. The West India trade is better, and during the past week the schooner Nellie Colman cleared for Port Antonio with 61,000 feet of lumber and 39,000 shingles; also the schooner Jennie Stubbs, with 75,000 feet of lumber,

for Kingston, Ja. Steamers for New York took about 10,000 feet of lumber. The quotations are as follows: Merchantable \$14.00 to \$16.00 for city sawed and \$12.00 to \$14.00 for railroad; square and round timber \$9.00 to \$13.00, and \$8.00 to \$11.00 for raft. Dock timber is quoted \$4.50 to \$6.50 and shipping \$8.50 to \$10.50. Shingles are steady, with a fair demand, at \$5.00 to \$7.00 per thousand. In lumber freights there is a moderate demand for handy-sized vessels, and rates are unchanged. Lumber to New York \$5.00 and to Philadelphia \$4.75. Crossties to New York, thirty-six inches, are quoted thirteen cents each.

EXPORTS OF LUMBER FROM CHARLESTON FROM SEPTEMBER 1, 1892, TO JANUARY 27, 1893.

Exported to	1892-'93. Feet.	1891-'92. Feet.
New York...	14,169,171	12,621,336
Boston...	634,740	
Philadelphia...	2,154,292	2,859,000
Baltimore...	840,000	534,000
Other United States ports...	709,000	998,000
Total coastwise...	18,507,203	17,012,336
Great Britain...		
Palermo...		
France...		
West Indies...	1,309,096	1,382,300
South America...		177,000
Nova Scotia...		
Other foreign ports...		578,174
Total foreign...	1,309,096	2,137,474
Grand total...	19,816,299	19,149,810

Savannah.

[From our own Correspondent.]

SAVANNAH, GA., January 31.

The lumber market is showing remarkable strength, and the business during the week has exhibited a good general demand. Values are firm for all desirable grades of lumber, and the mills in the interior are all fully engaged with orders. The shipments of lumber during the week were made to the following coastwise and foreign ports: New York 831,127 feet, Philadelphia 40,000 feet, Boston 40,000 feet, Providence 264,305 feet, Baltimore 535,550 feet, and to the West Indies and South America 244,639 feet, making a total of 1,955,621 feet, and since September 1, 1892, 50,241,616 feet.

Pensacola.

[From our own Correspondent.]

PENSACOLA, FLA., January 31.

The lumber and timber trade of this port is at present very active, and from the number of vessels in port the business of the next month will be larger than January. The demand for lumber from foreign markets is much greater than at the corresponding period last year, and the South American trade is assuming larger proportions. From the West Indies and Mexico there is a good inquiry, and the total coastwise shipments of lumber for the week will aggregate 550,000 feet, and foreign 3,607,000 feet. The foreign demand for timber is a shade better, and during the past week the exports amount to nearly 3,000,000 feet. At the close of business yesterday the quotations were on a basis of 12¼ cents for sawn timber, according to average and quality, with a good demand. Hewn timber is not in demand, and there is no quotations. There is a very encouraging report from the interior, and the mills are generally fully occupied in getting out orders. The streams are all at a good stage of water, and logs are in full supply. The whole features of the industry show many marks of improvement, and the business so far during the year is in excess of the corresponding period last season.

Mobile.

[From our own Correspondent.]

MOBILE, ALA., January 31.

There has been a fairly active market in lumber and timber during the week, and the outlook may be considered as encouraging. During the past week there has been a very fair demand for lumber, and

the inquiry from the West Indies and Mexico is gradually increasing. Coastwise and foreign shipments have been light on account of the severe weather, but are now beginning to improve. Over a million feet of lumber was shipped to Mexico, and a like quantity to the West Indies. The total shipments of lumber to all ports for the week aggregated 2,262,741 feet, and since September 1, 1892, the shipments aggregate 29,015,559 feet, against 20,659,546 feet for the same period in 1891-'92. Hewn timber is still dull, but several shipments have been made during the week to the United Kingdom, aggregating 95,596 cubic feet, and since September 1, 1892, the shipments amount to 757,697 cubic feet, against 545,407 cubic feet for 1891. In sawn timber 80,834 cubic feet were shipped to foreign ports, and since September 1, 1892, 759,783 cubic feet have been exported, against 435,482 cubic feet for 1891.

Orange.

[From our own Correspondent.]

ORANGE, TEXAS, January 28.

There is a good demand for lumber throughout this section and the market is fairly active, with stocks not excessive, but sufficient for the present requirements. The trade of the current year bids fair to exceed that of 1892, and the action of the Board of Trade on the question of deep water will tend to help lumber markets very materially. Much interest is felt in the canal scheme to open up a cheap waterway between the mills of this place and Beaumont and the city of Galveston. The shipments of lumber from Orange for 1892 indicate that the demand was active, and the tabulated statement given below shows an increase of 2428 cars over the shipments of 1891.

SHIPMENTS OF LUMBER FROM ORANGE, TEXAS, IN CARLOADS.

Month.	1891.	1892.
January...	559	447
February...	514	594
March...	605	756
April...	510	539
May...	492	661
June...	642	866
July...	690	868
August...	635	888
September...	635	951
October...	593	993
November...	509	947
December...	435	740
Total...	6792	9220

The total shipments from Beaumont (including south and east Texas points) and Orange are as follows:

	1891. Cars.	1892. Cars.
Beaumont...	19,398	19,084
Orange...	6,791	9,220
Total...	26,189	28,304

A BILL granting valuable franchises is before the Texas legislature with a favorable committee report. It authorizes the Waco Water Power & Electric Co. to construct a dam of not less than fifteen head of water in the Brazos river at any point within five miles of the suspension bridge at Waco. The land and riparian rights of the State in and adjacent to the river influencing the dam are to be enjoyed by the company, and the company is to construct locks and other passways in the dam for river navigation. A resolution has also been introduced requesting Congress to appropriate \$100,000 for a survey of the Brazos river between Waco and Columbia.

A MR. DEAN has introduced the following remarkable creation in the Texas legislature: "Concurrent resolution to request Texas Congressmen to vote against the Nicaragua Canal bill, and to formulate and vote for a bill to authorize the general government to construct a canal to connect the Gulf of Mexico with the Pacific ocean."

IRON MARKETS.

Philadelphia.

[From our own Correspondent.]

PHILADELPHIA, February 1.

The general features of the iron trade continue of a promising character, although the market has failed to gain any strength during the past week. There is a heavy consumption of both crude and finished products, but, while the buyers are as numerous as could be wished, no one seems to have sufficient confidence in the future course of the market to place orders beyond an amount sufficient to meet pressing wants. The placing of orders last week for the plates and shapes for the government cruisers, and the probable early giving out of the contracts for the 20,000 tons of material required for the new American liners, is expected to have a beneficial effect on the market for both pig iron and finished products. While there is considerable irregularity in the pig-iron branch, furnacemen generally are firm in their prices. In some instances buyers have secured slight concessions on present rates, where the iron was not of well-known character, but most of the transactions have been at the old rates. The leading Southern producers who are offering iron in this market are equally firm in their prices, so that there is no weakening factor in this direction. On the whole, the present situation is one in which manufacturers find much that is encouraging, and the prospects of a heavier demand during this month is regarded as very good. There is so much hesitancy on the part of purchasers to depart from their present system of buying, that it is difficult to accurately gauge the course of the market. For the best brands of iron quotations continue as follows, deliveries of Southern iron 100 miles West and South of here being made at the usual concessions on these rates:

Standard Pa. No. 1 X.....	\$14 75@	15 25
" No. 2 X.....	14 25@	14 50
" Forge.....	13 00@	13 50
Southern coke No. 1 foundry.....	14 25@	14 50
" No. 2.....	13 50@	13 75
" gray forge.....	13 00@	13 25

Wheeling.

[From our own Correspondent.]

WHEELING, W. VA., February 1.

The first day of the second month of the new year finds the iron business, so far as pig iron is concerned at least, in about the same condition it has been for a month or more. This applies to actual business and transactions, but prospects are a little better, and it is to be hoped that another month will work radical changes that will prove more than satisfactory. The difficulty today is not precisely the same as that which was presented to ironmasters two weeks ago. At that time prices had not found such low levels, but the demand was so extremely light as to leave trade almost without foundation on which to rest.

Today prices are considerably lower, but the demand has been increased in proportion, so that the situation, all phases considered, is not quite so bad. If a satisfactory demand can be created, there is no occasion for alarm about prices rising to a point where profit can be realized. The point has been reached where sales of pig iron are almost equivalent to the exchange of one dollar for another, and it is asserted that in some instances first-class coin has been discounted.

The chief occasion for hope is found in the fact that the demand for finished products, which has been almost nothing, is growing a little more firm and steady. This state of affairs will have to exist more than a few days before it will be felt in the pig-iron market. The production of raw iron has been so heavy compared with the consumption (although it has been considered decreased) that it will take some time for things to even themselves up. However, if the upward tendency sets in, stocks in hand and supply and demand

will not exert the same influence that they do when prices are on the down grade. It seems to be an almost immutable law which makes people buy on a rising market and wait when prices are going down. As was said before, it is not possible for rates to go much lower, and the furnacemen have their choice of losing money, increasing prices or closing down. Surrounding circumstances warrant the belief that prices will be pushed up a few notches, and that before long.

Mill iron has gotten down to the lowest point reached in a long while, and \$12.25 is looked upon as the standard of price, while it is generally believed that better figures have been obtained and could be obtained today.

Bessemer pig has found the lowest level ever known, and has sold for \$13.25 or less. The condition of the soft steel market is not reassuring, and it is not impossible that Bessemer may see even worse conditions. Prices are quoted as follows:

No. 1 mill iron.....	\$12 25
No. 1 Southern mill iron.....	12 25
No. 1 foundry.....	14 50
No. 2.....	13 50
No. 3.....	13 50
Bessemer.....	13 35

Pittsburg.

[From our own Correspondent.]

PITTSBURG, February 1.

The feature of the past week in the pig-iron market was the attempt to work prices both ways, up and down. A rushing, unexplainable action was made to dispose of material, as, it is said, in certain other branches of trade, "for less than actual cost." There does not appear any stronger reason why this should come tumbling down upon the market now than at any other time within the past year. The downward tendency, especially in Bessemer, that has been noted recently seems to have struck a violent turn, and is likely to stay right in that shape. The cut from \$13.65 down to \$13.40, and even in some instances to \$13.25 and \$13.10, is one of those things for which no one has a diagram that fits the premises. The very large use to which Bessemer is being put daily in the mills to replace boiled iron does not seem to be a reason for the sudden change. Another suggestion that the furnacemen are determined to reduce their stocks seems to be about as good reason, and yet with it all we have the spectacle of the buyers flatly refusing to buy larger quantities than they did before with all the low price inducements that can be held out. Bessemer can now be had without question for \$13.25 free on board at this city. There has been very little iron sold since the break occurred, but there is a probability, or more accurately an expectation, that considerable material will be disposed of before the rates advance. The quotations are:

Gray forge.....	\$12 25@
Mill iron.....	12 50@ 12 75
Foundry No. 1.....	14 00@ 14 10
" No. 2.....	13 00@ 13 10
Bessemer.....	13 25@

Cincinnati.

CINCINNATI, January 28.

There have been no striking features to the iron market since our last report was made. The volume of business, while not large, has been growing gradually. Some quite large contracts with pipe works and other consumers have been closed, mainly for deliveries running forward several months. There has also been a steady run of small carload orders. Beyond this the mood of buyers is still a waiting one. Prices have not varied much from those ruling at the opening of the year. They have shaded off twenty-five cents per ton from November and December prices, and transactions have been reported at figures very close to the minimum of last summer.

The general business situation is not yet clearly enough defined to enable iron men to forecast intelligently the year before them. Two or three weeks of extremely unfavorable weather have retarded opera-

tions in nearly all manufacturing lines and thrown things out of proper balance. The situation, however, is improving, and prospects on the whole favor a good business year. Money is becoming easy and rates are ruling low.

We quote for cash f. o. b. cars Cincinnati:

Southern coke No. 1 foundry.....	\$13 50@	14 00
" No. 2 foundry and.....	12 25@	12 75
Hanging Rock coke No. 1.....	15 50@	16 00
" charcoal No. 1.....	18 50@	19 50
Tennessee charcoal No. 1.....	16 00@	16 50
Jackson county stone coal No. 1.....	16 00@	16 50
Southern coke, gray forge.....	11 25@	11 75
" mottled.....	11 00@	11 25
Standard Alabama car wheel.....	18 00@	19 00
Tennessee car wheel.....	17 00@	17 50
Lake Superior car wheel.....	17 50@	18 00

ROGERS, BROWN & CO.

Chicago.

CHICAGO, January 28.

Absence of activity characterized the market for the past week as far as new business is concerned, but sellers are being very much annoyed on account of not being able to get iron through to consumers promptly, this owing to the heavy weather. Rumors are heard of cutting in prices on both Northern and Southern coke irons, and buyers seem to be unwilling to take hold largely, believing that prices will go lower. There seems to be little foundation, however, for this belief. Lake Superior charcoals unchanged.

We quote for cash f. o. b. Chicago:

Southern coke No. 2 foundry.....	\$13 50@	14 00
" No. 2 soft.....	13 25@	13 75

ROGERS, BROWN & MERWIN.

St. Louis.

ST. LOUIS, January 28.

More activity is noticeable in the local market this week. One order of 1000 tons foundry iron was placed since our last report, and another of about 500 tons.

Several of the Southern furnaces that have a large accumulation of certain grades of iron are making a slight concession on large orders for early delivery, although on extended deliveries there has been no change in prices.

We quote for cash f. o. b. St. Louis:

Southern coke No. 1.....	\$14 25@	14 50
" No. 2.....	13 00@	13 25
" No. 3.....	12 50@	12 75
" gray forge.....	12 00@	12 25
" charcoal No. 1.....	16 00@	16 50
Missouri " No. 1.....	14 50@	15 00
Ohio softeners.....	16 50@	17 00
Lake Superior car wheel.....	18 00@	18 25
Southern ".....	18 50@	18 75
Frick's Connellsville foundry coke.....	5 65	5 65

ROGERS, BROWN & MEACHAM.

Louisville.

LOUISVILLE, January 28.

There is really nothing new to be said about the iron market. Offerings by the furnaces are probably a little more liberal than for some time in No. 1 and No. 2 foundry and soft grades, but prices remain about the same; if any different, they are a shade lower.

HOT BLAST FOUNDRY IRONS.

Southern coke No. 1.....	\$13 50@	13 75
" No. 2.....	12 50@	12 75
" charcoal No. 1.....	16 00@	16 50
" No. 2.....	15 50@	16 00

FORGE IRONS.

Neutral coke.....	11 50@	12 00
Mottled.....	11 00@	11 25
Southern (standard brands).....	20 00@	21 00
" (other brands).....	18 50@	19 50
Lake Superior.....	19 50@	20 50

HALL BROS. & CO.

Southern Iron Notes.

A. C. SCHRYVER, of San Antonio, Texas, who is developing iron mines at Bessemer, near Llano, has ordered \$20,000 worth of new machinery for mining.

THE Supreme Court at New Orleans has affirmed the decision of the lower court, appointing Mr. W. K. Sheldon receiver of the Fort Payne (Ala.) Coal & Iron Co.

A REPORT is current that at the April meeting of the Tennessee Coal, Iron & Railroad Co.'s stockholders Mr. Platt will retire from the presidency and will be succeeded by either Mr. H. F. De Bardeleben, of Birmingham, or Nathaniel Baxter, of Nashville. Mr. De Bardeleben owns a majority of the stock, and it is believed will secure his own election and remove

the company's headquarters from New York to Nashville.

JOHN YOUNG is developing a fine iron mine near Waynesboro, Va. The deposit is brown hematite ore.

NAT BAXTER, JR., vice-president of the Tennessee Coal, Iron & Railroad Co., has petitioned the Tennessee legislature that the State bear part of the expense incurred by his company during the recent mining troubles.

THE affairs of the Woodstock Iron Co., of Anniston, Ala., have been placed in the hands of Messrs. W. G. Ledbetter and J. W. Stillwell as receivers. This course means a reorganization of the company and its reinstatement on a sound financial basis.

THE Mathieson Alkali Works, of Saltville, Va., have closed a contract with the American Bridge & Iron Works, of Roanoke, for nearly 1500 tons of material to be used in constructing the alkali works. This will necessitate the employment by the bridge works of a large number of mechanics, as it is understood that the order is to be pushed as rapidly as possible.

To Use Palmetto for Tanning.

The Palmetto Manufacturing Co., of Savannah, Ga., has been organized and the following officers elected: G. W. Lamar, president; W. G. Morrell, vice-president, and A. Minis, secretary and treasurer. The directors are G. W. Lamar, W. G. Morrell, J. W. Preston, R. S. Mell and C. B. Warrand. The company owns the Warrand patents for tanning with palmetto and to manufacture various products from the residue after extracting the tannin. Several tanneries in the vicinity of Savannah are projected, amongst others one at Bloomingdale and another one at Marlow. These places have an abundance of palmetto within easy reach. The gentlemen who have the management of the affairs of the Palmetto Company are well-known business men, who will do all in their power to encourage and develop this new industry.

Recent Publications.

POOR'S HAND-BOOK OF INVESTMENT SECURITIES FOR 1892-93. A supplementary work to Poor's Manual of Railroads. Published by H. V. & H. W. Poor, New York city. Cloth, 800 pages, royal octavo. Price \$1.00.

This publication is much broader in its scope than its title conveys, and the field it covers is exhaustively treated. The data—the authenticity for which the standing of the publishers is an acceptable guarantee—is comprehensive and far-reaching, and the subject-matter is effectively grouped. An estimate of the pertinent and diversified subjects covered may be obtained from a summary of the different heads. The chief feature is a series of articles upon the finances and resources of the United States and the Union. There are departments giving desirable information relative to the bonds of railroads, cities, counties, corporations, etc.; details of the leading commercial, financial, industrial and railroad companies, showing financial condition, rate and time of dividends, obligations, etc.; statistics of railroad incomes and earnings, mileage, etc.; a separate map of each State and Territory, showing counties, cities, towns and railroads, and other useful matter. The book is a valuable contribution to the nation's commercial and industrial history, and the facts it contains so handily arranged make it a text-book of actual necessity to every business man.

GREENVILLE, VA., is a young tobacco market, and is making a fine showing for one only eighteen months old. For the five months ending January 1st the city shipped 1,275,274 pounds of tobacco, and about one-third of this went to Richmond. Large quantities of tobacco are still in the prizehouses awaiting shipments.

COTTON MARKET.

NEW ORLEANS, LA., January 30.

Editor Manufacturers' Record:

A larger movement today than expected and anticipated action on the Hatch bill tomorrow by the United States Senate brought out more liquidation of longs, and the result is eleven points lower here than Saturday. So far as our own opinion is concerned, we have made up our minds as to what the crop promises in size, and therefore there is nothing that we can say on that subject that will be either new or of benefit to ourselves or your readers. We do cling to the idea, which must be that of most everyone, that in the near future the spinner must buy, and with that hope we have recently had the feeling that we were on the eve of a better consuming demand, but Liverpool continues apathetic to an astonishing extent, and a continuance of the strike gives the masters a good excuse for not increasing takings, and in the meantime stocks are not reduced to any extent in Liverpool and exports from this side grow smaller by degrees. Stocks in America have thus far not been depressing, and with the easiness of money there is no reason why any alarm should be felt, perhaps, as to lower prices, but of course there will be timid people anxious to realize, and should this condition of things come about there might be considerable letting go of cotton. The supporting influence, we think, from this time on, outside of Liverpool's spot demand, must come in the shape of a promise unqualifiedly made by the producer for a short supply the next season, because it is as plain to anyone as to us that an 8,000,000 crop will bring depression upon our people, for the reason that an article that is not salable at the moment with the prospective crop of 6,500,000 maximum will hardly be in a better position, to say the least, if in the spring the prospective supply should be 8,500,000. Our replies to our recent circular issues in reference to acreage reduction are beginning to assume a most distinct shape, and indicate that acreage will be materially lessened, largely on account of merchants extending but little credit, but perhaps mainly owing to the lack of seed, much of which will be imperfect, inasmuch as the planter seems largely to have held for picking purposes what was picked late in the season, and this in a large section was touched by frost, and thus promises poor stands. Should such conditions of the seed cause replanting there will be nothing to put into the ground and the land will be useless for cotton. We have got to make the domestic and foreign spinner believe our people are in earnest about this matter. The bears are talking lower prices, while small-crop people are somewhat on the anxious bench and awaiting developments, hoping for some encouragement in the near future.

ATWOOD VIOLETT & CO.

CLOSING PRICES OF FUTURES FEBRUARY 1.

Months.	New Orleans.	New York.	Liverpool.
January.....	.....	.....	.....
February.....	9-14	9-26	5 3-64
March.....	9-21	9-35	5 4-64
April.....	9-26	9-48	5 5-64
May.....	9-32	9-57	5 6-64
June.....	9-37	9-62	5 7-64
July.....	9-43	9-66	5 9-64
August.....	.....	9-68	5 11-64
September.....	.....	9-46	5 2-64 val'e
October.....	.....	9-39	.....
November.....	.....	.....	.....
December.....	.....	.....	.....
Tone of market.	Quiet.	Firm.	Quiet & steady.

CLOSING PRICES OF SPOT COTTON FEBRUARY 1.

Grade.	New Orleans.	New York.	Liverpool.
Middling.....	9 1/4	9 7-16	5 1/4
Low middling.....	8 3/4	9	5
Good ordinary.....	8 1/4	8 5-16	4 1/4
Tone of market.	Quiet.	Quiet.	Firm.

Savannah a National Melon and Vegetable Market.

By Col. I. W. Avery.

Savannah has become the chief Southern distributing point for the juicy watermelon and the succulent vegetable.

Her comprehensive system of ocean, steamships, radiating in convenient water lines to the greatest seaports of this continent, Baltimore, Philadelphia, New York and Boston, carry by cheap water freight through the preservative salt air the millions of crimson-meated melons and tons of toothsome truck to the myriads of Northern epicurian livers, while her magnificent schemes of Western, Southwestern and Northern railway connections scatter the vast tonnage of the luscious stuff.

Tributary to her are Florida, with its floods of early vegetables and golden oranges; southwestern Georgia and Alabama, with their wonderful "Gem" and "Rattlesnake" melons and cantaloupes and melting pears, and middle Georgia, with its sweeping affluence of rosy peaches and nectared grapes.

Ten years ago this traffic was nothing. Now nearly 5000 carloads pour their millions of delicious packages of fruit and vegetables in Savannah's omniferous fruit-hopper through to the greedy world of hungry buyers and eaters. And the trade grows with an enlarging sweep and unfaltering steadiness.

The record of shipments gets bigger yearly, and when Southern direct trade opens foreign markets to these attractive products and delicacies of Southern soil, and brings the gardeners and fruit-growers of the Old World, with their experience and methods and industrious thrift, to make our waste and surplus fruit and vegetable Georgia lands, under its beneficent climate, smile into widening harvests of the varied and ravishing table glories that are indigenous to us, we can pretty nearly feed civilization. We can ship abroad as well as North, and delight the Old World as well as the New with the treasures of our orchards, vineyards and gardens, and swell Southern commerce.

While Savannah draws her fruit from a wide territory, she divides with Florida the raising of vegetables and is the centre of an immediate truck environment unsurpassed on the continent in fertility and convenience. Surrounded by country of great forests and low, damp soil of unusual depth and richness laying as level as a floor, drainage on a broad scientific plan has converted this black, deep swamp into a healthy El Dorado of blooming and profitable gardens and truck farms that fill the steamships, send spring eating to Northern markets, invite the skilled gardener of Europe to settle and add expounding volume to the trade of Savannah.

There are great truck farms around Savannah handled with consummate skill, cultivated on the intensive plan, fertilized deep and generously and kept in constant harvest of a paying succession of crops of vegetables of every kind—tomatoes, egg-plants, lettuce, potatoes, asparagus, beans, peas, cabbage and strawberries.

Savannah and the country around her make a genuine truck oasis of national value that will grow to transatlantic importance under the fostering power of direct trade.

Funding Plan of the East Tennessee Land Co.

The announcement is made that the plan for so readjusting the finances of the East Tennessee Land Co. as to enable it to complete the development of its town-building enterprise at Harriman, Tenn., has been carried out and the necessary subscriptions to the new stock secured. The plan provided for the issue and sale of a 6 per cent. cumulative first lien preferred stock to the amount of \$1,000,000. This

new stock is not an increase of the company's capital by so much, but it is to take the place of the third million of stock in the hands of the Central Trust Co. as collateral security for the first mortgage bonds. The proceeds of the sale of the new stock are to be used in paying the company's indebtedness, including its mortgage bonds. The issue and exchange for \$1,000,000 or less of the present stock of the company of a 4 per cent. second preferred stock and the creation or designation of common stock to an amount not less than \$1,000,000, to be created or designated out of the outstanding stock of the company and to be exchangeable for real estate, are also provided. The execution of this plan leaves the company's properties free, clear and unencumbered, and relieves it to the utmost reasonable extent of fixed charges. The capitalization still remains \$3,000,000, which at the outset it was understood would have to be placed in order to carry the enterprise through successfully. The \$1,000,000 cash which the company secures after wiping out all indebtedness gives to the management a substantial sum to prosecute its policy of progress. The coal, mineral, town, timber and agricultural lands of the company are rich in their peculiar advantages and resources, and are considered to be fully worth \$4,000,000, and with the broadened plan of development to be put under way are expected to materially enhance in value. Harriman, it is thought, will soon have under full swing activity in all its interests.

TRADE NOTES.

HALL & BROWN, of St. Louis, Mo., are exceedingly busy with orders for the extensive line of woodworking machinery they manufacture.

THE Aetna Steam Pump Co., of Springfield, Ill., has been rapidly extending its business, and is now securing orders from all parts of the country.

THE Central Machine & Foundry Co., of Quincy, Ill., reports a good trade in electric elevators and steam pumps, which constitutes the larger part of its rapidly growing business.

THE Thorn & Hunkins Lime & Cement Co., of St. Louis, Mo., is meeting with great success in introducing its product. Architects and builders have commended it highly wherever it has been tried.

THE Smith & Hill Co., of Quincy, Ill., has recently made quite an addition to its plant to manufacture hand and power elevators, steam pumps, etc. It reports a good business and bright prospects for the future.

THE Whitman Agricultural Works, of St. Louis, Mo., is receiving many orders for its new spring trucks and other specialties. Brickmakers who have used these commend them most highly for convenience and durability.

THE Springfield Boiler & Manufacturing Co., of Springfield, Ill., which has been in operation for about two years, is meeting with excellent success in introducing the extensive line of boilers which it manufactures.

THE Rankin & Fritsch Machine Co., of St. Louis, Mo., is receiving heavy orders from the South and West for its Corliss engines. A large number of contracts are being closed in these sections for complete power plants.

JOHN MASLIN & SON, of Jersey City, N. J., have greatly increased their facilities for manufacturing their well-known improved pump and duplicate parts for their old style vacuum pump, and are now offering them at reduced rates.

THE Wright & Adams Co., of Quincy, Ill., has enlarged its facilities for turning out improved hoisting machinery for coal-mining plants. It will present during this season a new style of automatic engine designed especially for electric-power plants.

THE Elliott Frog & Switch Co., of East St. Louis, Ill., is doing a heavy volume of business in frogs, crossings, switches, etc., and is also successfully bringing out a number of new specialties, which are meeting with favor on the part of the railroads.

THE Hoyt & Bro. Machinery Co., of Aurora, Ill., manufacturers of special lines of heavy planers and woodworking machinery, are selling a large number of heavy machines in California, Oregon and Washington, where they are found

invaluable for working the hardwoods of that section.

GEO. J. FRITZ, of St. Louis, Mo., is doing an extensive business in manufacturing laundry machines, for which there is a heavy demand in the South. His business in other lines, foundry, machine and millwright work, is also large and extending rapidly.

THE Todd Pulley & Shafting Works, of East St. Louis, Ill., have a large trade in the South and West which, with a considerable business, has kept it very busy. The plant is equipped with the latest improved machinery for the production of its specialties.

A CHANCE to purchase a first-class cotton mill equipment may be had by addressing the Home Mills of St. Louis, Mo. The machinery is calculated to work up about six bales of cotton per day, has cost nearly \$150,000, and will be sold at a great sacrifice for removal.

THE Bucyrus Steam Shovel & Dredge Co., Bucyrus, Ohio, is making good headway in the erection of the new works at Milwaukee, Wis. The company recently received a number of large orders for its improved steam shovels and dredges, and is consequently very busy.

MESSRS. HINE & ROBERTSON, 54 Cortlandt street, New York city, recently placed an order for 50,000 pounds of Eureka packing, said to be the largest single order for packing ever given. This packing is distributed throughout all sections of the United States, and is evidently in good demand.

THE Cook Well Co., of St. Louis, Mo., has recently secured some excellent contracts for securing pure water supply in many places. It is preparing to extend its business into various parts of the country, and anticipates a good trade, as the necessity for pure water supply is being more clearly recognized each day.

J. W. TAYLOR, the Southern representative of the Stilwell-Bierce & Smith-Vaile Co., of Dayton, Ohio, has secured the contract for a complete system of water works in the city of Barnesville, Ga., the price being \$18,874. The pumping machinery will be a large compound duplex pump with 12x18 and 12x8-inch cylinders.

GEORGE F. DREW, formerly of Drew, Baldwin & Co., of New York, has become manager of the New York office of F. P. Sheldon & Co., of Providence, R. I., with New York office, 45 Broadway. This firm is well known as mill engineers and architects, and will attend to all matters relating to the construction and equipment of mills or factories.

A COMPLETE plant for the manufacture of wagons, with capacity of twenty vehicles per day, will be sold at Raleigh, N. C., on February 21. The property is located within the city limits, and enjoys good railroad facilities. The buildings are new and commodious, and the machinery is in prime condition. Myatt & Holding, trustees, can give further particulars.

THE Berlin Iron Bridge Co., of East Berlin, Conn., has received the contract for rebuilding the tube mill of Curtis & Co., at Cohoes, N. Y., lately destroyed by fire. The new plant will be fire-proof, constructed entirely of iron and brick, no woodwork being used. The building will be 132 feet wide by 131 feet long, with a wing one side twenty feet wide by seventy-four feet long.

NICOL, BURR & CO., of Peoria, Ill., anticipate a considerable demand for their Robinson automatic Corliss engine, to which a number of new features have been added. The engines are made in a number of sizes, and the greatest care taken that in construction and workmanship they shall be exceptionally well made. It is said that for economical operation and close regulation they cannot be excelled.

THE American Ship Windlass Co., Providence, R. I., recently designed a steam capstan for handling a swing bridge at Curacao, West Indies, which is working admirably. Formerly they were obliged to keep a tugboat under steam all the time to swing this bridge, which is now done effectively by the steam capstan and boiler put in by the American Ship Windlass Co., and which greatly reduces the expense of operating the bridge.

J. S. GRAHAM & CO., Rochester, N. Y., report business very good. Among the recent orders on their books are a planing-mill outfit for Wetmore Lumber Co., Ludlow, Pa.; planing-mill outfit for Mersereau & Co., Portville, N. Y.; planing machine for John A. Smith, Rochester, N. Y.; two planing machines and double saw for Alfred Dolge, Dolgeville, N. Y.; self-feed saw tables for C. E. Vandercook, Troy, N. Y.; B. O. Adams, Livonia, N. Y., and G. O. Sanders Lumber Co., Nashua, N. H.; also four of the celebrated Goehring geometrical mold ng machines, one Goehring geometrical circular molding machine and one Goehring geometrical panel molding machine for J. M. Bennett & Sons, Manchester, England, and one Goehring geometrical molding machine to be shipped to Germany.

CONSTRUCTION DEPARTMENT.

WE PUBLISH, every week, a list of every new factory, of whatever kind, projected anywhere in the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their interest to read this department carefully each week.

* Means machinery is wanted, particulars of which will be found in "Machinery Wanted" columns.

In correspondence relating to matters reported in this paper, it will be a favor if it is stated that the information was gained from the MANUFACTURERS' RECORD.

ALABAMA.

Alabama City—Furniture Factory.—E. W. Kendall and others have leased the furniture plant at Alabama City, and will operate it as the Union Furniture Factory.

Anniston—Lime-kiln.—Mr. Rouse will erect a lime-kiln.

Bessemer—Dynamite Plant.—The Sterling Dynamite Co.'s plant, reported in this issue as destroyed by an explosion, will be rebuilt.

Cullman—Water Works.—A bill has been introduced in the legislature to authorize the city of Cullman to issue bonds to erect and maintain a water-works system. The mayor can inform.

Huntsville—Knitting Mills.—The Huntsville Knitting Mills are putting in additional machinery.

La Fayette—Cotton Gin.—W. C. Darden will rebuild his cotton gin reported in this issue as burned.

Mobile—Electric-power Plant.—The Mobile Electric Street Railway Co. is putting in additional machinery.

Mobile—Sewerage System.—A bill has been introduced in the legislature authorizing the city of Mobile to construct and maintain a sewerage system, etc. The mayor can inform.

Montgomery—Bridge Company.—A bill has been introduced in the legislature to incorporate the Montgomery Bridge Co.

Montgomery—Warehouse and Mercantile Company.—A bill has been introduced in the legislature to incorporate the Columbia Warehouse & Mercantile Co.

Montgomery—Cotton Mill.—A bill has been introduced in the legislature to incorporate the Galeton Cotton Mills.

Vinegar Bend—Saw Mills.—The Vinegar Bend Lumber Co. will put in an additional battery of boilers.

Wetumpka—Electric-power and Light Plant.—M. B. Houghton, F. M. Billing, H. S. Williams, Peter A. Buycik and John H. Parker have incorporated the Wetumpka Falls Electric Power & Manufacturing Co. to erect an electric-power and light plant, etc.—The capital stock is \$100,000, with the privilege to increase it to \$1,000,000.

ARKANSAS.

Cherry Valley—Heading Factory.—Beck & Ellis Bros. are putting in new stave machinery.

Paragould—Stave and Heading Factory.—The Henry Wrape Co. has been incorporated with Henry Wrape, Sr., as president, and Henry J. Wrape, Jr., secretary and treasurer, to manufacture staves and heading. The capital stock is \$30,000.

FLORIDA.

Bartow—Phosphate Mines.—The Foote Phosphate & Fertilizer Co. has been incorporated, and has contracted with H. F. Mayfield to erect a 100-ton plant.

Jacksonville—Industrial Development Company.—The Jacksonville Industrial Development Co. has been incorporated with B. F. Dillon, president; R. B. Archibald, vice-president; T. W. Roby, secretary, and C. H. Smith, treasurer, to conduct the real estate business, and to encourage and promote the establishment of factories, etc. The capital stock is \$10,000.

GEORGIA.

Atlanta—Greenhouses.—Mrs. A. Lambert will erect large greenhouses.

Augusta—Barrel Factory.—E. W. Lambert, of Montgomery, Ala., will establish a barrel factory at Augusta.

Brunswick—Saw Mill.—Hilton & Dodge are putting in additional machinery in their mill on St. Simon's island.

La Grange—Harness Factory.—R. B. Hudson and J. B. Halle will establish a harness factory.

Thompson—Gold Mines.—J. H. Porter, of New York, has invested \$10,000 for machinery for the Frank gold mines in McDuffie county which he recently purchased.

Upatoi—Saw Mill.—G. W. Favors & Co. will rebuild their saw mill reported in this issue as destroyed by boiler explosion.

Waycross—Water Works System.—The city is erecting a system of water works. The mayor can inform.

KENTUCKY.

Ashland—Packet Company.—John W. Henderson, Jas. Johnson and Jas. H. Pooge have incorporated the Ashland Packet Co. to conduct business as carriers of freight, etc. The capital stock is \$5000.

Lexington—Elevator, etc.—Byrnes & Lewis will erect a grain elevator.

Louisville—Land and Investment Company.—A. J. Speckert, G. F. Rottenburger, Frank Speckert, John Hoertz and others have incorporated the German-American Real Estate & Investment Co. to conduct a general real estate and investment business. The capital stock is \$250,000.

Louisville—Tobacco Works.—Wm. H. Irving, Wm. E. Peak and John K. Pfau have incorporated the Herald Tobacco Works Co. to engage in the manufacture of tobacco, etc. The capital stock is \$15,000, with privilege of increasing to \$50,000.

LOUISIANA.

Baton Rouge—Moss Factory.—The Gass moss factory, reported in this issue as burned, will be rebuilt.

New Orleans—Bottling Works.—The American Bottling Co., Limited, has been incorporated with Edward G. Schleider, president, and Frank Beck, secretary and treasurer, to conduct a beer-bottling business, etc. The capital stock is \$15,000.

New Orleans—Cigar Factory.—Wallis & Co. have been incorporated as Wallis & Co., Limited, with W. W. Wallis, president; C. I. Wallis, vice-president, and Louis P. Hart, of Boston, Mass., secretary, to manufacture cigars, etc. The capital stock is \$200,000.

New Orleans—Machine Works.—The McArdle & Sinclair Manufacturing Co., Limited, reported last week as incorporated, has the following officers: Peter H. McArdle, president; James A. Sinclair, vice-president, and Kendal W. Hess, secretary and treasurer.

Patterson—Saw Mill.—N. B. Trelue & Co. will put additional machinery in their saw mill.

Plaquemine—Foundry and Machine Shops.—Messrs. Blackie & Nadler are enlarging their foundry and machine shops, and will put in additional machinery.

MARYLAND.

Baltimore—Publishing Company.—A. G. Eichelberger, Charles J. Morris, W. L. McCleary, Wm. Silverwood and W. Kleinle have incorporated the Morris Publishing Co. to conduct a general book, job and newspaper printing business. The capital stock is \$15,000.

Berlin—Woodenware Factory.—J. J. McClusky, of New York, will establish a woodenware factory in Berlin for the manufacture of wooden butter trays, etc. The Berlin Improvement Co. can give information.

Cumberland—Extract Company.—R. Lee McCarty and others have incorporated the A. B. McCarty Bark Extract Co. The capital stock is \$30,000.

Cumberland—Lumber Mills.—D. J. Blackiston and John Schaidt will erect lumber mills.

MISSISSIPPI.

Hattiesburg—Saw Mill.—The Tatum-O'Neal Lumber Co. will erect a saw mill.

Hollandale—Saw Mill.—E. R. Hart & Co. have started a new saw mill.

Natchez—Cotton Mills.—The Rosalie Mills Co. are putting in additional machinery.

New Albany—Heading and Stave Factory.—E. C. & W. V. Groce will erect a stave and heading factory.

NORTH CAROLINA.

Franklin—Cottonseed-oil Mill.—The Franklin Cotton Product Co., lately reported as incorporated, has organized with the following officers: N. Y. Galley, president; C. S. Williams, vice-president; Jas. A. Henly, secretary, and C. S. Vann, treasurer. A cottonseed-oil mill will be erected at once. The paid-up capital is \$25,000.

Greensboro—Finishing Mill.—The Southern Finishing & Warehouse Co. has been organized with N. Ellington, president; J. N. Cone, treasurer, and C. Mebane, secretary, to erect and operate a

finishing mill for finishing cotton goods, etc. The capital stock is \$100,000.

Lockville—Cotton Mill.—A company has been incorporated to erect a cotton mill with W. R. Odell, president; J. H. Wissler, vice-president, and O. C. Bynum, secretary and treasurer. The capital stock is \$100,000.

Lumberton—Real Estate and Improvement Company.—A bill has been introduced in the legislature to incorporate the Carolina Real Estate & Improvement Co.

Mooreboro—Cotton Factory.—R. B. Miller, S. Settemeyer, J. S. Pruett, S. J. Hamrick, R. H. Green and J. V. Hamrick have organized a company to erect a cotton factory.

New Berne—Barrel Factory.—Messrs. Jones & Co. are erecting a barrel factory.

New Berne—Trunk Factory.—J. B. Clarke has established a trunk factory.

Oxford—Lumber Mills.—Hundley Bros. & Co. will add another saw mill and put in other wood-working machinery.

Paint Rock—Lime-kilns.—The Limebrook Lime Co. will erect and operate lime-kilns.

Raleigh—Cotton Mill.—A bill has been introduced in the legislature to incorporate the Carolina Cotton Mill Co.

Raleigh—Lumber Mills.—A bill has been introduced in the legislature to incorporate the North Carolina Lumber Co.

Raleigh—Manufacturing Company.—A bill has been introduced in the legislature to incorporate the North State Manufacturing Co.

Raleigh—Stone Company.—A bill has been introduced in the legislature to incorporate the North State Brownstone Co.

Statesville—Corundum Mines.—The Acme Corundum Mining Co. has been incorporated by H. A. Collins, of Statesville, and Jas. W. James and B. Howland, of Pennsylvania, to open and operate corundum mines. The capital stock is \$20,000.

Statesville—Cotton Mill.—The Statesville Cotton Mill has been organized by D. A. Tompkins, of Charlotte, and J. W. Capeland, B. F. Long, T. D. Miller, Wm. Wallace, M. R. Adams and others to erect and operate a cotton mill. The capital stock is \$100,000.

Wilmington—Oyster Company.—Hugh MacRae, S. MacRae, J. F. Divine and others are the incorporators of the Stone's Bay Oyster Co., lately reported as incorporated.

Wilmington—G. W. Williams, Jas. Sprunt, J. W. Harper, W. L. Smith and others have incorporated the General Construction & Guarantee Co.

SOUTH CAROLINA.

Charleston—Cotton Mills.—Samuel Dibble, of Orangeburg; Thomas M. Rayson, Jas. H. Fowles, W. Lowman, J. N. H. Dukes and B. H. Moss have incorporated the Edisto Cotton Mills. The capital stock is \$100,000.

Charleston—Lumber Mills.—The Carolina & Georgia Lumber Co. has been incorporated with Jas. M. Seignious, president; H. C. Gill, secretary and treasurer, and Wm. L. Sales, general manager.

Columbia—Cotton Mill.—R. L. Abney, of Columbia; D. R. Sortwell, of Cambridge, Mass.; Geo. Wallace, of Newtonville, Mass., and C. K. Oliver, of Baltimore, Md., have incorporated the Columbia Mills Co. for the purpose of manufacturing, spinning, dyeing, printing and dealing in cotton ducks, yarns, twines, etc. The capital stock is \$700,000.

Edgefield—Limestone Mines, etc.—W. A. Stram, A. L. Williams and E. G. Stram have incorporated the Limestone Co. of Edgefield to operate mines, gins, etc. The capital stock is \$75,000.

Rock Hill—Machine Works.—The Rock Hill Machine Works has been incorporated by W. S. Creighton, John Landon and P. C. Poag. The capital stock is \$10,000.

Rock Hill—Mercantile Company.—W. L. Roddey, J. E. Roddey, J. F. Reid, S. L. Reid, A. F. Ruff and R. E. Sadler have incorporated the Roddey Mercantile Co. The capital stock is \$50,000, with privilege of increasing it to \$100,000.

Spartanburg—Telephone and Telegraph Company.—The Glenn Springs Telephone & Telegraph Co. has been incorporated with Paul Simpson, president, and R. C. Simpson, secretary and treasurer, to erect a telephone from Spartanburg to Glenn Springs.

TENNESSEE.

Chattanooga—Pork Packing-house.—Messrs. Meyer & Co., of Cincinnati, Ohio, intend to erect a pork packing-house in Chattanooga with a capacity to kill and pack 400 hogs daily.

Chattanooga—Elevator and Cotton Compress. A company has been organized with a capital stock of \$200,000 to operate the Union Elevator and Cotton Compress. G. N. Henson can inform.

Dyersburg—Stave and Heading Factory.—N. W. Calcutt will double the capacity of his stave and heading factory.

Memphis—Planing Mill.—Friedel, Reder & Co. will rebuild their planing mill recently burned.

Mount Pleasant—Stave Factory.—The C. W. Rich Co. will enlarge its stave plant.

Murfreesboro—Planing Mill.—Perkins, Sons & Co. will put in additional machinery.

Nashville—Electric-light Plant, Sewerage, etc. A bill has been introduced in the legislature authorizing the city of Nashville to issue bonds to erect and maintain an electric-light plant and construct a sewerage system. The mayor can give information.

Summertown—Planing Mill.—The Lawrence County Lumber Co. will put in additional machinery and erect a planing mill.

Tullahoma—Drain-tile Works.—J. D. Raht & Co. contemplate erecting drain-tile works.

TEXAS.

Alvin—Canning Factory.—Mr. Taylor, of Beloit, Kans., contemplates establishing a canning factory at Alvin.

Austin—Electrotype Works.—H. J. Ketchum has established an electrotyping and stereotyping shop. Machinery has been contracted for.

Bryan—Cottonseed-oil Mill.—The company recently reported as organized to erect a cottonseed-oil mill has been incorporated as the Bryan Cotton Oil Mill Co. by M. Parker, W. J. Morris, J. O. Chance, O. D. McConnice and others. The capital stock is \$5000.

Cameron—Water Works and Electric-light Plant.—The city will erect a water works system and an electric-light plant. The mayor can inform.

El Paso—Water Works System.—The city council has let contract to the Cook Well Co., of St. Louis, to erect a water works system. The mayor can give information.

Fort Worth—Distillery.—A plant to be called the Columbia Distillery is in course of erection; capital \$250,000. F. M. Clark can give information.

Galveston—Brick Plant.—The North Galveston Brick Co. has established a brick plant. Moore & Jack, of Fort Worth, can give information.

Galveston—Millinery Company.—J. W. Wakeman, E. Johnson and H. A. Wunderlich have incorporated the Texas Millinery Co. The capital stock is \$25,000.

Houston—Ice Factory.—Zilker & McGraw will rebuild their ice factory reported in this issue as burned.

Orange—Transportation Company.—The Orange & Galveston Transportation Co. has been incorporated with W. H. Stark, president; L. Miller, treasurer, and Geo. Bancroft, secretary. The capital stock is \$50,000.

Palestine—Feed Mill.—The Palestine Manufacturing Co. will establish a feed mill.

Pecos—Improvement Company.—C. F. Thompson, B. N. Aycock, P. H. Goodloe, R. S. Johnson, J. E. Bowen, W. D. Johnson and T. J. Hefner have incorporated the Pecos Improvement Co. The capital stock is \$12,000.

San Antonio—Brewery.—The Lone Star Brewing Co. is putting in new and extensive improvements to cost \$100,000.

San Antonio—Pump Factory.—The F. F. Collins Manufacturing Co. will erect a new pump factory.

Texarkana—Investment and Manufacturing Company.—W. H. Titson, A. Mitchell and J. A. Rube have incorporated the Texas Patent Investment & Manufacturing Co. The capital stock is \$10,000.

VIRGINIA.

Clintwood—Coal Mines.—W. J. Hornsby, W. P. Washburn, P. E. Blow, M. Campbell, S. P. Blow and J. W. Sneed, of Knoxville, Tenn., have purchased coal lands, and will open and operate coal mines.

Lynchburg—Foundry and Machine Shops.—The Glamorgan Co. contemplates putting in an additional pipe pit.

Manchester—Fuel and Gas Company.—The Southern Fuel & Gas Co., recently organized, will erect a plant in Manchester.

Richmond—Spice Plant.—The Southern Manufacturing Co. contemplates enlarging its spice plant.

Riverton—Stave Factory.—The Carson Lime Co. will erect and operate a stave factory.

Staunton—Flour Mill.—The White Star Milling Co. has let contract to E. Falls & Co., of Milwaukee, Wis., for the erection of a \$50,000 flour mill. Its capacity will be 500 barrels daily.

Stuart's Draft—Flour, Feed and Meal Mill.—The Stuart's Draft Milling Co., lately reported, has let contract to the Barnard & Leas Manufac-

ring Co., of Moline, Ill., for a mill with a daily capacity of 150 barrels of flour, 500 bushels of hop feed and 350 bushels of bolted meal. The buildings alone will cost \$15,000.

Proutville—Canning Factory.—C. E. & C. A. Korman will erect a canning factory.

Waynesboro—Iron Mines.—Iron mines are being developed near Waynesboro by John Young.

WEST VIRGINIA.

Buckhannon—Saw Mills.—Messrs. Fell & Strahan, of Pennsylvania, will erect saw mills on Ten-Mile creek.

Central City—Lumber Mills.—F. McClelland, W. H. Dawkins, W. J. Crutcher, E. S. Smith, A. N. Lambert and A. J. Dawkins, all of Ironton, Ohio, are the incorporators of the Central City Lumber Co., recently reported as to erect lumber mills.

Harper's Ferry—Gold Mines.—The Buford Gold Mining Co. has been incorporated by N. G. Pennington, of Baltimore, Md., and others.

Kellogg—Powder Mill.—The Phoenix Powder Manufacturing Co. is rebuilding its powder mill recently destroyed by explosion.

Marlinton—Saw Mills.—The Rochester Boom & Lumber Co., lately reported as incorporated, will erect saw mills to cost \$130,000.

Weston—Agricultural Implements.—A company has been organized with W. J. Kitson as president and general manager, to manufacture churns, seed planters and other agricultural implements. The capital stock is \$25,000.

Wheeling—Steel Plant.—The Wheeling Steel & Iron Co. will make improvements to its plant to the amount of \$175,000.

BURNED.

Anderson, Texas.—Grimes county's new courthouse.

Baton Rouge, La.—The Gass moss factory.

Bessemer, Ala.—The Sterling Dynamite Co.'s plant destroyed by an explosion.

Houston, Texas.—Zilker & McGraw's ice factory; loss \$45,000.

La Fayette, Ala.—W. C. Darden's cotton gin.

Upatoe, Ga.—G. W. Favors & Co.'s saw mill destroyed by explosion of boiler.

BUILDING NOTES.

Baltimore, Md.—Institute Building.—A new building to cost \$40,000 will be built for the Humphrey Moore Institute. S. H. & J. F. Adams are the builders.

Columbia, S. C.—Bank Building.—The Canal Dime Savings Bank will erect a bank building.

Dallas, Texas—Church.—A new Methodist Episcopal church will be built at a cost of \$20,000. Martens & Silven have prepared plans. Rev. A. A. Whitman, pastor.

Dublin, Texas—Church.—Taylor & Smith have made plans for a new Baptist church to cost \$500.

Greensboro, N. C.—Church.—A Methodist church may be built at a cost of from \$20,000 to \$35,000. Charles H. Ireland can inform.

Houston, Texas—Warehouse.—R. P. Smith has lately obtained permit to erect an iron and brick warehouse to cost \$10,000.

Louisville, Ky.—Warehouse.—The Louisville Public Warehouse Co. will erect a new warehouse.

New Orleans, La.—Club Building.—The Pelican Athletic Club, capital stock \$25,000, will erect an arena and club building. Charles Hoyle, secretary.

Perry, Ga.—The Masonic lodge will build a brick block 52x70 feet, two stories high. E. J. Fuller can inform.

Petersburg, Va.—Church.—The congregation of St. Joseph's Catholic Church will erect a new church at a cost of \$25,000.

San Antonio, Texas.—The Lone Star Brewing Co. has obtained permit to erect a stable to cost \$7,000.

Shendun, Va.—Hotel.—The Grottoes Hotel, recently burned, may be rebuilt. Plans for a larger building of brick on the old site are now being discussed.

Somerville, Ala.—Courthouse.—Morgan county contemplates building a courthouse. County clerk can inform.

St. Augustine, Fla.—The servants' quarters of the Alcazar Hotel, which were destroyed by fire last week at a loss of \$75,000, will be rebuilt at once.

Tampa, Fla.—Opera-house.—A \$15,000 stock company will be formed to erect an opera-house. D. S. Macfarlane can be addressed.

Washington, D. C.—Genl. J. B. Henderson will remodel and improve his residence at a cost of \$40,000; Chas. A. Arundel will erect a three-story dwelling to cost \$5500; the Washington Post Co. will erect a six-story printing and business office at a cost of \$55,000; J. D. Milans will erect a three-story brick dwelling to cost \$5900; W. H. Finkle will erect a three-story brick dwelling to cost \$8500.

Yoakum, Texas—Temple.—The Odd Fellows' Building Association has been chartered to erect a \$10,000 temple. James D. Montgomery, president, can give information.

RAILROAD CONSTRUCTION.

Railroads.

Aberdeen, N. C.—The Aberdeen & Rock Fish Railroad Co. has built six miles of road, and expects to build more shortly; Jno. Blue, president.

Beattyville, Ky.—An extension of the Winchester & Beattyville Railroad to Boonville is probable.

Charleston, S. C.—Chas. I. Rawson, J. T. Stoddard, Jno. Bradley, E. L. Collins and R. C. Gilchrist have applied for charter for the Seaview City Railroad with a capital stock of \$200,000. They propose building from Hog island, in Charleston harbor, through Mt. Pleasant and Moultrieville to the east side of Sullivan's island, known as Seaview City.

Dublin, Ga.—At the annual meeting of the stockholders of the Macon, Dublin & Savannah Railroad held recently it was decided to commence as soon as possible work on the extension to Savannah. The issuance of \$800,000 of bonds is suggested to carry out these plans.

Durham, N. C.—A bill to incorporate the Durham & Charlotte Railroad Co. has been introduced in the legislature.

Fort Smith, Ark.—G. H. Healy and S. B. Weir, of Beaver, Oklahoma, have applied for charter in Oklahoma to build a railroad from Fort Smith through the Indian Territory and Oklahoma to New Mexico. The capital stock is to be \$5,000,000.

Jefferson, Texas.—The East Line & Red River Railroad may be extended to Shreveport, La., in the near future. The road was sold under order of court on January 24 to Simon Sterne, attorney of the Central Trust Co., of New York, for \$1,400,000.

Memphis, Tenn.—Concerning the project for building a railroad from Memphis to Joplin, Mo., recently mentioned, J. A. Grayson, of Pierce City, Mo., writes us: "We hope to commence survey in April; will complete organization at an early date; will commence work as soon as right of way and proper aid is secured."

Mobile, Ala.—The East Tennessee, Virginia & Georgia Railway Co. (office, Knoxville, Tenn.) will make extensive improvements in its terminal facilities at Mobile, and lay three miles of additional track to enable it to enter the city over its own road.

Montgomery, Ala.—A bill to incorporate the Gulf & Northern Railroad (with amendment) has passed the legislature.

Pensacola, Fla.—Contract for grading the Pensacola, Alabama & Tennessee Railroad has been let to J. D. Halbert, of Baldwin county, Ala., and he will begin work at once, employing 300 men at the start. This road is projected from Pensacola to an Alabama connection, and will be forty miles in length.

Raleigh, N. C.—A bill to incorporate the Virginia & North Carolina Railroad Co. has been introduced in the legislature.

Riverdale, N. C.—Cyrus Fausc, J. C. Pittman, Joseph Sabiston and J. J. Hines will apply to the State legislature for a charter for a railroad to be built from at or near Riverdale via Stella to Swansboro, running through the counties of Craven, Carteret and Jones, and to be known as the Neuse & Swansboro Railroad.

Roberts, Texas.—A corps of surveyors have commenced work on the line of the Texas Midland Railroad's proposed extension from Roberts to Paris. Two surveys will be made, one by way of Sulphur Springs and Cooper, and one by way of Greenville or Black Jack, and then the directors will choose over which the extension will be built.

Rock Ledge, Fla.—It is reported that H. M. Flagler has let contract for eighty-seven miles of the proposed extension of the Jacksonville, St. Augustine & Indian River Railroad (office, St. Augustine) from Rock Ledge to Juno.

Thurber, Texas.—A meeting of the citizens of Stephenville was held recently to consider plans for building a railroad from Thurber through Stephenville to some point on the Central Railway. L. N. Frank, of Stephenville, can give information.

Waco, Texas.—Surveys will be made at once for an extension of the Texas Midland Railroad from Waco to Austin and San Antonio. This will necessitate the construction of a railroad bridge across the Brazos river, and will be built in connection with the Texas Central.

Waco, Texas.—Wm. Davis, F. E. Rogers and George Parker, lately reported as having made preliminary surveys for a railroad from Waco to Moody, have applied for charter and will commence building at once. The road will extend through the counties of McLennan, Falls, Milam, Bells, Williamson and Travis, a distance of twenty-eight miles.*

Wilmot, Ark.—The Texarkana & Fort Smith Railway will be extended from Wilmot north sixty miles. Contract will be ready to let about

February 20 for twenty-five miles. Gus Knoble is engineer.

Electrical and Street Railways.

Alexandria, Va.—Luther W. Spear and associates have been granted a franchise by the city to construct a single-track street railway.

Chattanooga, Tenn.—Xan Wheeler, Willard Warner, C. E. James, Franklin Harris and F. J. Bennett propose to build a new electric street railway.

Dallas, Texas.—A. W. Childress and associates have obtained franchise to construct and operate an electric street railway. About fifteen miles of road will be built by July 1st.

San Antonio, Texas.—A franchise for the construction of about twenty-five miles of electric street railway has been granted to the Alamo Electric Street Railway Co. Chas. E. Harris, of New York, and associates are interested.

MACHINERY WANTED

If you desire to purchase machinery of any kind consult our advertising columns, and if you cannot find just what you wish, send us particulars as to the kind of machinery needed. We will make your wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. You will thus get all information desired as to prices, etc.

Boiler.—Ferris & Richards, 98 Hudson street, Jersey City, N. J., want a steel boiler, return tubular, half front, sixteen feet by seventy-two inches, seventy-one 4-inch flues. Quote prices f. o. b. Fayetteville, N. C.

Boiler.—W. L. Matthews, York Station, Ala., wants to purchase a thirty-horse-power boiler.

Boiler and Engine.—George H. Way, Citra, Fla., wants to buy a six to eight horse-power engine and boiler.

Brick Machinery.—W. C. Hansford, Stamper, Miss., wants information concerning brick machinery.

Bridge.—Sealed bids, with plans and specifications for an iron drawbridge across Cain river, will be received until March 10. Address C. V. Porter, president, Natchitoches, La.

Broom Machinery.—Thos. A. Davis & Son, Aniston, Ala., want prices on machinery for making brooms.

Canning Factory.—W. B. Shaw, Henderson, N. C., wants to correspond with manufacturers of canning-factory outfits.

Cars.—F. E. Rogers, Waco, Texas, wants prices on cars; second-hand will do.

Cotton Compress.—T. F. Gilly, Caldwell, Texas, desires to correspond with manufacturers of a compress that can be used at an ordinary ginny.

Cotton Factory.—Manufacturers of cotton-factory outfits should correspond with Mike Brown, of Allendale, S. C.

Cotton Gin.—A. E. Falka, Warda, Texas, wants complete cotton-gin outfit.

Cotton Mill.—Information of cotton manufacturing and machinery for same is wanted by Chas. H. Moses, 281 St. James Place, Brooklyn, N. Y.

Cottonseed-oil Mill.—The Caldwell Oil Mill Co., Caldwell, Texas, wants plans and specifications of machinery and buildings for a 20-ton cottonseed-oil mill. Address T. F. Gilly, secretary.

Drain-tile Machinery.—J. D. Raht & Co., Tulsa, Okla., Tenn., want information regarding cost of outfit for manufacturing drain tiles.

Engine.—J. Reese McConn, Ebenezer, S. C., will need a one or two horse-power engine.

Engine.—W. L. Matthews, York Station, Ala., wants to purchase a twenty-five horse-power centre-crank engine.

Engines.—The San Antonio Electric Street Railway Co., San Antonio, Texas, wants two 100 to 125 horse-power engines.

Fertilizer Factory.—Manufacturers of outfits for fertilizer factory should correspond with Mike Brown, of Allendale, S. C.

Furniture Factory.—John H. Tate, High Point, N. C., will soon be in the market for a full line of machinery and power to manufacture furniture.

Horseshoe Machinery.—R. E. Pepper, Savannah, Ga., wants information and prices on machinery for manufacturing horseshoes.

Lath Machine.—N. B. Trelue & Co., Patterson, La., will want a lath machine.

Locomotives.—F. E. Rogers, Waco, Texas, wants prices on locomotives; second-hand will answer.

Paper Mill.—The Old Kentucky Paper Co., Louisville, Ky., will be in the market for a paper mill. Address H. C. Wedekemper, secretary.

Picket Header.—N. B. Trelue & Co., Patterson, La., will want a picket header.

Pipe.—Ferris & Richards, 98 Hudson street, Jersey City, N. J., wants about 550 tons cast-iron pipe. Quote prices f. o. b. Fayetteville, N. C.

Printing Plant.—T. Flavin, Galveston, Texas, will purchase a printing plant.

Pumps.—Ferris & Richards, 98 Hudson street, Jersey City, N. J., want a duplex power pump, 10-inch cylinders, to deliver 500 gallons per minute against 200 feet head; also a duplex steam pump 14x10, 1,000,000 gallons, 200 feet high, eighty pounds steam. Quote prices f. o. b. Fayetteville, N. C.

Railroad.—The Natchez & Pascagoula Railroad Co. will need light passenger equipment of standard gage. Address F. W. Flint, of Pascagoula, Miss.

Rails, etc.—F. E. Rogers, Waco, Texas, wants rails, splices, bolts, frogs, switches, etc.; second-hand will answer.

Saw Mills.—Rowland Cobb, Buckhannon, W. Va., will want outfits for circular mills.

Spool and Bobbin Machinery.—R. A. Burroughs, North Wilkesboro, N. C., wants prices on machinery for making spools and bobbins.

Standpipes.—George A. Tower, 109 South First street, Richmond, Va., wants to correspond with manufacturers of standpipes.

Standpipe.—Ferris & Richards, 98 Hudson street, Jersey City, N. J., want a standpipe 13x100, wrought iron, complete. Quote prices f. o. b. Fayetteville, N. C.

Turbine Wheel.—Ferris & Richards, 98 Hudson street, Jersey City, N. J., want a 30-inch turbine. Quote prices f. o. b. Fayetteville, N. C.

Veneering Machinery.—Prices and description of veneering machinery for manufacturing crates is wanted by P. O. Box 155, Newnan, Ga.

Woodenware Machinery.—E. T. Mallory, Forsyth, Ga., wants to correspond with manufacturers of machinery for making wooden baskets and crates.

Woodworking Machinery.—Hundley Bros. & Co., Oxford, N. C., want machinery for making coiled hoops, staves and heading, spokes, handles, etc., and shuttle-blocks and bobbins; second-hand machinery will answer.

Woodworking Tools.—The Robins Lumber Co., Conway, Ark., wants tools for sash, door and finishing work.

Brooks & Richter, of Sweet Chalybeate, Va., want to buy seasoned wagon spokes, untenoned.

Edward Shumers, of Paris, Ky., wants to correspond with iron front manufacturers.

Ferris & Richards, 98 Hudson street, Jersey City, N. J., want yarns, lead, tools and general supplies for water-works system.

Mr. J. P. Durrance, of Brooksville, Fla., wants doors and windows for a church now building.

Oldham county, Ky., will in a short time be ready to contract for several iron bridges, and correspondence can be addressed to A. T. Ladd, of La Grange.

The Hampton Manufacturing Co., Hampton, Va., will buy a multiple boring machine of from five to six spindles. Will require on same adjustment of about five feet from outer to centre of outside holes and from nine inches to twelve inches from front to back, with a capacity of working all in 4-inch oak lumber.

Thos. H. Fox, P. O. Box 68, Richmond, Va., wants to correspond with manufacturers of iron or steel office furniture, shelves, document files, etc.

The North Galveston (Texas) Agricultural Works wants prices on all classes of agricultural coffin hardware, hardwood, etc.

SOUTHERN FINANCIAL NEWS.

New Banks.

Denison, Texas.—The corporate existence of the First National Bank has been extended to January 31, 1913.

Dublin, Texas.—R. W. Higginbotham and associates have filed application for authority to organize a national bank.

Little Rock, Ark.—The First National Bank has been reorganized and business will be resumed.

Raleigh, N. C.—A bill to incorporate the Bank of North Carolina has been introduced in the legislature.

Wesson, Miss.—The Bank of Wesson has been organized with R. S. Saunders, of Jackson, as president, and W. M. Atkinson, of Magnolia, vice-president.

Wharton, Texas.—Application for authority to organize a national bank has been filed with the comptroller.

Wilson, N. C.—A bill has been introduced in the legislature to amend the charter of the State Bank of Wilson and change its name to the Branch Banking Co.

Alexandria, Va.—The Mercantile Railway, Building and Loan Association has declared a dividend of 24 per cent.

Baltimore, Md.—The New Central Coal Co. has declared a dividend of 1 per cent.

Bristol, Tenn.—The Holston National Building and Loan Association, at its annual meeting last week, adopted a resolution favoring the issuance of \$100,000 in bonds, to be sold at par and redeemed in seven years; Albert Parlett, secretary.

Covington, Tenn.—A bill authorizing Covington to issue \$100,000 in bonds for school purposes has been introduced in the legislature; also a bill authorizing the issuance of \$15,000 in bonds to pay for various county improvements.

Eufaula, Ala.—A bill to incorporate the Eufaula Investment & Security Co. has been introduced in the legislature.

Eutaw, Ala.—A bill authorizing the city to issue \$100 in bonds has been introduced in the legislature. The mayor can inform.

Galveston, Texas.—The Preston Chemical Co. has declared a semi-annual dividend of 5 per cent.

Hickory, N. C.—The Hickory Manufacturing Co. has declared a semi-annual dividend of 6 per cent.

Jacksonville, Fla.—The Florida Central & Peninsular Railroad Co. has filed at Lake City a mortgage to the New York Guarantee & Indemnity Co., under date of January 2, 1893, for \$7,500,000.

Jasper, Tenn.—The Bank of Jasper has suspended and will not resume business; J. W. Beckwith, assignee.

Lexington, Tenn.—A bill has passed its third reading in the legislature, empowering Lexington to purchase \$20,000 worth of stock in the Paducah, Tennessee & Alabama Railroad and issue \$20,000 of 6 per cent. bonds in payment for same.

Macon, Ga.—The Macon Savings Bank has declared a dividend of 3½ per cent.

Memphis, Tenn.—A bill authorizing the city to issue \$60,000 in bonds for erecting market-house has been introduced in the legislature. The mayor can inform.

Memphis, Tenn.—A bill has been introduced in the legislature authorizing Memphis to issue \$3,000,000 in bonds to refund its bonded debt. The mayor can inform.

New Orleans, La.—The Merchants' Insurance Co. has been chartered to succeed the Merchants' Mutual Insurance Co., of New Orleans. The capital stock is \$300,000. Paul Capdevielle, president.

Somerville, Ala.—A bill authorizing Morgan county to issue bonds for building courthouse has passed the legislature; county clerk can inform.

Spartanburg, S. C.—The city will hold an election on March 1st to consider issuing \$10,000 of school bonds; the mayor can inform.

TRADE NOTES.

THE Berlin Iron Bridge Co., of East Berlin, Conn., will build the new machine shop for S. F. Hodge & Co., Detroit, Mich. The building will be 150 feet long and of the modern type, the central portion being forty feet in width, controlled by a traveling crane of twenty tons capacity, with a wing on each side twenty-two feet in width, the wings being two stories high. When completed it will be one of the best machine shops in the Northwest.

THE Chattanooga Steel Roofing Co. has succeeded the Cambridge Roofing Co., of Chattanooga, Tenn., having purchased its factory, stock and all rights and business. The management will be continued under J. E. Annis. The new company will make a specialty of Crowl's patent steel roofing, but will also manufacture a full line of corrugated and V-crimped iron roofing and siding, standing seam iron roofing, iron weatherboards, painted, galvanized and tinned. It will also carry a full stock of mixed and roofing paints.

THE Bradstreet Company has moved its Baltimore office into handsome apartments in the new Equitable building. Since the incorporation of the Bradstreet Company in 1876 the increase of its business has been phenomenal, while its facilities have been greatly augmented. No expense is considered too great in procuring and applying to the conduct of the business all possible improvements. With its present system for obtaining and promulgating information this agency is justly regarded by its patrons as authority on all matters affecting commercial credit.

A CHANGE is announced in the well-known Philadelphia house of James W. Queen & Co., manufacturers of scientific instruments. A stock company has been formed to succeed the firm, which was dissolved by mutual consent, with Samuel L. Fox, president; Edward B. Fox, vice-president, and F. W. Stanwood, secretary and treasurer. The title of the corporation remains about the same, Queen & Co. The company issues a series of catalogues comprehensively covering under suitable headings the various apparatus, instruments, etc., it handles.

THE Frey-Sheeler Co., of Bucyrus, Ohio; J. W. Penfield & Son, of Willoughby, Ohio; E. M. Freese & Co., of Galion, Ohio; Chisholm, Boyd &

White, of Chicago, Ill.; Simpson Press Brick Machine Co., of Chicago, Ill., and C. W. Raymond & Co., of Dayton, Ohio, have joined in a movement to make a creditable exhibit of brick machinery at the Columbian Exposition. The exposition authorities had made no provision for this class of exhibits, and the above manufacturers will erect a substantial building in accordance with plans passed by the exposition authorities. The building with cover a space 250x100 feet and cost not less than \$15,000.

An unusual list of second-hand machinery is placed on the market by J. W. Humbird, of Cumberland, Md. It embraces one vertical blowing engine 20x60x36, running 120 revolutions per minute; one blower sixty-four inches in diameter with 40-inch stroke; one air drum fifty-four inches diameter and 152 inches long, with all connections to hot-blast house; three boilers forty-two inches diameter by twenty feet long, with flues, etc.; one pair hoisting engines, triple geared, hot-blast house, steam pumps, etc. The list is worthy of investigation by those in need of machinery of this character, and no doubt some excellent bargains can be obtained.

J. H. GAREY, manager of the Coosa River Lumber Co., at Siding, Miss., writes the Globe Dry Kiln Co. as follows: "I can say unhesitatingly that I consider yours the best kiln on the market, without exception. I can recommend it especially for cleanliness, safety and quick work. The lumber is not in the least case hardened or checked, and when dressed presents a very smooth and handsome appearance. I regard it as absolutely safe. I am quite sure that it dries lumber in less time than any kiln, and is as durable. It is just what you claim. It is so complete in its construction that it will run 365 days in the year without getting out of order. It is so simple that anyone can operate it."

THE James River Coal Co., of Huguenot, Va., secured its charter on November 18, 1892, and leased for twenty-three years, with privilege of renewals, the mineral rights on 1897 acres of coal land, the terms being a royalty of ten cents per ton on a daily output of 100 tons, or fifteen cents per ton on an output of less than this amount. The property lies in Powhatan county, Va., on the bank of the James river, seventeen miles from Richmond, and contains several seams of excellent coal. The capital stock of the company is \$100,000, of which \$80,000 are issued, fully paid up and non-assessable. Of this there are \$20,000 now for sale, for which application may be made to L. A. Gabanyi, secretary, Richmond, Va.

WITHIN the past sixty days John C. N. Guilbert, 115 Broadway, New York, has furnished his patent "swinging hose-rack" for the equipment of the following buildings: Denver Athletic Club, Denver, Col.; the Hotel Waldorf, New York city; Mahoning County Infirmary, Canfield, Ohio; Homeopathic Hospital, Boston, Mass.; Canton Surgical & Dental Chair Co., Canton, Ohio; Osgood Hall, Toronto, Ont.; the Empire Theatre, New York city; new opera-house, Pawtucket, R. I.; winter circus, Philadelphia, Pa.; Niblo's Garden, New York city; Times Printing Co., Chattanooga, Tenn.; New York State Printing Office, Albany, N. Y.; Waterman Building, Albany, N. Y.; car shops Norfolk & Western Railway, Lambert's Point, Va.; Theimer & Co.'s box factory, Baltimore, Md.; Cincinnati Gas Light & Coke Co., Cincinnati, Ohio; Cleveland Axle Manufacturing Co., Canton, Ohio; Tivoli Mills, Cohoes, N. Y.; Meath & Co.'s factory, Danbury, Conn.; Decatur Lumber Co., Decatur, Ills.

TRADE LITERATURE.

AN exquisite reproduction of the "Revenge of the Flowers" ornaments a neat calendar sent us by Steffner & Sloan, of Chattanooga, Tenn.

A CALENDAR in several colors, with good illustrations of a brick-kiln at work and the plant of the Cleveland Fire Brick Co., of Cleveland, Tenn., comes from that company.

THE Cushman Iron Co., of Roanoke, Va., has issued the second edition of its illustrated catalogue of fences and railings, in which are shown many new designs. In structural irons, beams and channels all the standard shapes are shown. Of these latter a large stock is always carried, thus enabling the builder or architect to secure what he requires without having to wait upon the mill. The catalogue is one which is valuable throughout from its convenient arrangement, the many fine designs shown and the prices quoted.

TOLAND & SONS, of Baltimore, Md., have issued a well-prepared and very complete illustrated catalogue of the well-known lines of saws they manufacture. This company has for the past forty years been engaged in producing saws, and in that time has won for itself an enviable reputation for the high quality of work done. The "Black Diamond" trade-mark is a recognized guarantee of good goods. This catalogue will be found useful to all sawyers, as, besides the illustrations and description of the saws, many useful little points as to their value are given.

OPPORTUNITIES FOR INVESTMENT

We shall be pleased to answer communications and give information concerning the following opportunities for investment. Address all correspondence to the MANUFACTURERS' RECORD, Baltimore, Md., and be particular to give the number of the advertisement to which you refer.

No. 7.—A MANUFACTURING COMPANY in Texas desires to place \$25,000 ten-year 8 per cent. mortgage bonds, the total issue being \$50,000, of which \$32,000 has already been sold. The proceeds are to be used for final payments on machinery and for working capital. The bonds are secured by the entire property of the company, consisting of factory building, machinery and real estate, all of which has a clear title and is free of any incumbrance.

No. 8.—PHOSPHATE LAND.—600 acres pebble phosphate land within one and one-half miles of two important and competitive railroads. Extensive deposits in sand and marl matrix from two to fifteen feet deep, and ranging from 30 to 80 per cent. pebble. Analyses show from 60 to 80 per cent. phosphate of lime.

No. 9.—A tract of land located in the suburbs of Macon, Ga., and admirably adapted to manufacturing purposes, is offered for sale at reasonable price. The property is at the junction of three railroad lines, has abundant water supply, labor can be obtained cheaply, and all conditions requisite for industrial enterprises are present.

No. 10.—About 10,000 acres of mineral and timber land in one tract in North Carolina can be purchased cheap. The minerals are copper, iron, silver and nickel.

No. 11.—A tract of about 10,000 acres of timber land near Bristol, Tenn. Contains also several large deposits of iron ore which will soon be accessible by railroads now under construction.

No. 12.—About 17,000 acres of coal and timber land in Scott and Wise counties, Virginia, near to both the Norfolk & Western and South Atlantic & Ohio Railroads.

No. 13.—A copper ore property is for sale in North Carolina. There is an extensive deposit of ore upon which some development has been done with results that indicate the existence of a valuable property.

No. 14.—A woodworking concern in Virginia, engaged in the manufacture of interior woodwork, with a well-established trade and an abundance of orders in hand, desires to secure \$10,000 of additional capital to increase the plant and enable more advantageous purchases of material. It is desired that the investor of additional capital in this company shall assume its financial management. The business is well organized, has good plant, and is making money. The addition of more capital will greatly increase its facilities and earning power.

No. 15.—A fine tract of timber property in North Carolina, aggregating about 1,200 acres and covered with hardwoods and pine, can be secured at a reasonable figure. About one-quarter of the property is cleared and is admirably farming land. There are buildings upon the tract which could be utilized to good advantage for manufacturing purposes. There is a railroad station within one mile of this tract.

No. 16.—A valuable coal property in Tennessee, which is well under development, shipping coal regularly and earning a handsome return upon its value, can be purchased at a low figure. The property is sure to earn, under proper management, 10 to 15 per cent. per annum on the price that is asked for it. The property has been in operation about two years, and the mines are well established, and the shipping facilities are excellent.

No. 17.—We have knowledge of a large and very valuable granite property in Virginia, which is available for development and which ought to prove a very good investment. The property lies two and one-half miles from the Norfolk & Western Railroad, and very favorable arrangements can be made for the construction of a side track to the quarry. The property has never been developed, but could be opened at once at small expense. The granite is of excellent quality, admirably suited for building purposes. The color ranges from pale pink to purple, and the stone is susceptible of a high polish. There are quarries not far distant upon the same vein which are furnishing stone that has a wide reputation.

No. 18.—There is now in the market at a low price a tract of about 100,000 acres of good mountain timber land in western North Carolina. It has railroad communication, is well watered, and is admirably adapted to fruit growing and grazing, and particularly to the culture of tobacco. The timber is chiefly hard wood of several varieties. The property can be bought at a very reasonable figure.

No. 19.—One of the largest known deposits of jet marble in the United States is located near

Chattanooga, Tenn., near two railroads and with water communication. The marble is jet black, takes a fine polish, and is equal to any imported varieties. The owner being occupied with other business, will sell this property at a low figure, or might lease it upon a royalty basis.

No. 20.—A tract of about 1,200 acres of pebble phosphate property on Peace River in Polk county, Fla., has just been put upon the market for the first time, and is offered at a very low price. The property is well located for mining purposes, and mining can be carried on at a minimum cost. There are five other mining plants now in operation upon adjoining property, and this tract offers advantages rarely to be found, both in character of the deposit, facility of working and means of shipment. If purchased at once this property can be had at a low figure.

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